

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip 2297-1

ESI #: 831249-1

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	N.D.	1,1,1-trichloroethane (10)	N.D.
bromoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	N.D.	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
trans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,101,101

ng. added, ng. recovered, % recovery of Surrogate #2: 100,113,113

Amount of sample extracted: 5.0 ml

Amount of sample injected: 5.0 ml

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip-Aqueous 2297-1

ESI #: 831249-1

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (10)	N.D.	2-nitrophenol (10)	N.D.
2-chlorophenol (10)	N.D.	4-nitrophenol (10)	N.D.
2,4-dichlorophenol (10)	N.D.	2,4-dinitrophenol (40)	N.D.
2,4,6-trichlorophenol (10)	N.D.	2-methyl-4,6-dinitrophenol (60)	N.D.
pentachlorophenol (10)	N.D.	2,4-dimethylphenol (10)	N.D.
4-chloro-3-methylphenol (10)	2.8		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

NONE

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100,35,35
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100,95,95
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100,88,88
Amount of Sample Extracted 1,000 ml.
Final Extract Volume: 1.0 ml.
Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip-Aqueous 2297-1

ESI #: 831249-1

NOTE: 1) All results reported as micrograms per liter
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (10)	N.D.	dimethylphthalate (10)	N.D.
1,3-dichlorobenzene (10)	N.D.	diethylphthalate (10)	5.6
1,4-dichlorobenzene (10)	N.D.	di-n-butyl phthalate (10)	1.3
1,2,4-trichlorobenzene (10)	N.D.	butyl benzyl phthalate (10)	N.D.
hexachlorocyclopentadiene (20)	N.D.	bis(2-ethylhexyl)phthalate(10)	3.0
hexachloroethane (10)	N.D.	di-n-octylphthalate (10)	1.3
hexachlorobutadiene (10)	N.D.	naphthalene (10)	N.D.
hexachlorobenzene (10)	N.D.	2-chloronaphthalene (10)	N.D.
bis(2-chloroethyl)ether (10)	N.D.	acenaphthylene (10)	N.D.
bis(2-chloroisopropyl)ether (10)	N.D.	acenaphthene (10)	N.D.
bis(2-chloroethoxy)methane (10)	N.D.	phenanthrene (10)	N.D.
4-chlorophenylphenyl ether (10)	N.D.	anthracene (10)	N.D.
-bromophenylphenyl ether (10)	N.D.	fluorene (10)	N.D.
isophorone (10)	N.D.	fluoranthene (10)	N.D.
nitrobenzene (10)	N.D.	pyrene (10)	N.D.
2,4-dinitrotoluene (10)	N.D.	chrysene (10)	N.D.
2,6-dinitroltoluene (10)	N.D.	benzo(a)anthracene (10)	N.D.
n-nitrosodimethylamine (10)	N.D.	benzo(k)fluoranthene (10)	N.D.
n-nitrosodiphenylamine (10)	N.D.	benzo(b)fluoranthene (10)	N.D.
n-nitrosodi-n-propylamine (10)	N.D.	benzo(a)pyrene (10)	N.D.
1,2-diphenylhydrazine (10)	N.D.	indeno(1,2,3-cd)pyrene (20)	N.D.
3,3'-dichlorobenzidine (30)	N.D.	dibenzo(a,h)anthracene (20)	N.D.
benzidine (100)	N.D.	benzo(g,h,i)perylene (20)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: Janaury 19, 1984

SAMPLE: Allied Slip-Aqueous 2297-1

ESI #: 831249-1

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.01)	N.D.	alpha-BHC (0.01)	N.D.
dieldrin (0.01)	N.D.	beta-BHC (0.01)	N.D.
4,4'-DDT (0.01)	N.D.	delta-BHC (0.01)	N.D.
4,4'-DDE (0.01)	N.D.	gamma-BHC(lindane)(0.01)	N.D.
4,4'-DDD (0.01)	N.D.	chlordan (0.05)	N.D.
alpha-endosulfan (0.01)	N.D.	toxaphene (0.05)	N.D.
beta-endosulfan (0.01)	N.D.	PCB-1016 (0.05)	N.D.
endosulfan sulfate (0.01)	N.D.	PCB-1221 (0.05)	N.D.
endrin (0.01)	N.D.	PCB-1232 (0.05)	N.D.
endrin aldehyde (0.01)	N.D.	PCB-1242 (0.05)	N.D.
heptachlor (0.01)	N.D.	PCB-1248 (0.05)	N.D.
heptachlor epoxide (0.01)	N.D.	PCB-1254 (0.05)	N.D.
2,3,7,8-tetrachloro-dibenzo- p-dioxin (0.01)	N.D.	PCB-1260 (0.05)	N.D.

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520, 1535, 101

Amount of Sample Extracted: 1000 ml

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip Solid 2297-2

ESI #: 831249-2

NOTE: 1) All results reported as micrograms per kilogram (wet).
Total Solids = 61.0
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection
may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	N.D.	1,1,1-trichloroethane (10)	N.D.
romoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	3.5	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	3.6
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	2.3	vinyl chloride (10)	N.D.
rans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,108,108

ng. added, ng. recovered, % recovery of Surrogate #2: 100,119,119

Amount of sample extracted: 5.0 gm

Amount of sample injected: 5.0 gm

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip-Solid 2297-2

ESI #: 831249-2

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 61.0%
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (1.6)	N.D.	2-nitrophenol (1.6)	N.D.
2-chlorophenol (1.6)	N.D.	4-nitrophenol (1.6)	N.D.
2,4-dichlorophenol (1.6)	N.D.	2,4-dinitrophenol (6.4)	N.D.
2,4,6-trichlorophenol (1.6)	N.D.	2-methyl-4,6-dinitrophenol (9.6)	N.D.
pentachlorophenol (1.6)	N.D.	2,4-dimethylphenol (1.6)	N.D.
4-chloro-3-methylphenol (1.6)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

tridecane, 7-methyl-	6	benzene, (1-ethyloctadecyl)-	7
hexadecane	11	pentadecane, 2, 6, 10, 14-tetramethyl-	12
1-heptadecanol	4	benzene, (1-pentylheptyl)-	5
tridecane, 7-phenyl-	4	benzene, (1-propylnonyl)-	5
-eicosanol	4	benzene, (1-ethyldecyl)-	5
heptadecane, 2, 6, 10, 14-tetramethyl-	5	octadecane	9
hexadecane	12	eicosane	9
benzene, (1,1-diethylpropyl)-	9	eicosane	4
benzene, (2-decyldodecyl)-	11	eicosane	4
cyclohexane, 1-(1,5-dimethylhexyl)-4-(4-methylpentyl)-			6

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100, 84, 84

ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100, 123, 123

ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100, 131, 131

Amount of Sample Extracted 32.4 gm

Final Extract Volume: 4.0 ml.

Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip-Solid 2297-2

ESI #: 831249-2

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 61.0%
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection
may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (1.2)	N.D.	dimethylphthalate (1.2)	N.D.
1,3-dichlorobenzene (1.2)	N.D.	diethylphthalate (1.2)	0.31
1,4-dichlorobenzene (1.2)	N.D.	di-n-butyl phthalate (1.2)	N.D.
1,2,4-trichlorobenzene (1.2)	N.D.	butyl benzyl phthalate (1.2)	N.D.
hexachlorocyclopentadiene (2.4)	N.D.	bis(2-ethylhexyl)phthalate(1.2)	0.22
hexachloroethane (1.2)	N.D.	di-n-octylphthalate (1.2)	N.D.
hexachlorobutadiene (1.2)	N.D.	naphthalene (1.2)	N.D.
hexachlorobenzene (1.2)	N.D.	2-chloronaphthalene (1.2)	N.D.
bis(2-chloroethyl)ether (1.2)	N.D.	acenaphthylene (1.2)	N.D.
bis(2-chloroisopropyl)ether (1.2)	N.D.	acenaphthene (1.2)	0.16
bis(2-chloroethoxy)methane (1.2)	N.D.	phenanthrene (1.2)	N.D.
4-chlorophenylphenyl ether (1.2)	0.27	anthracene (1.2)	N.D.
4-bromophenylphenyl ether (1.2)	N.D.	fluorene (1.2)	N.D.
isophorone (1.2)	N.D.	fluoranthene (1.2)	N.D.
nitrobenzene (1.2)	N.D.	pyrene (1.2)	N.D.
2,4-dinitrotoluene (1.2)	0.27	chrysene (1.2)	N.D.
2,6-dinitrotoluene (1.2)	N.D.	benzo(a)anthracene (1.2)	N.D.
n-nitrosodimethylamine (1.2)	N.D.	benzo(k)fluoranthene (1.2)	N.D.
n-nitrosodiphenylamine (1.2)	N.D.	benzo(b)fluoranthene (1.2)	N.D.
n-nitrosodi-n-propylamine (1.2)	N.D.	benzo(a)pyrene (1.2)	N.D.
1,2-diphenylhydrazine (1.2)	N.D.	indeno(1,2,3-cd)pyrene (2.4)	N.D.
3,3'-dichlorobenzidine (3.6)	N.D.	dibenzo(a,h)anthracene (2.4)	N.D.
benzidine (12)	N.D.	benzo(g,h,i)perylene (2.4)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip-Solid 2297-2

ESI #: 831249-2

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 61.0%
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.005)	N.D.	alpha-BHC (0.005)	N.D.
dieldrin (0.01)	N.D.	beta-BHC (0.005)	N.D.
4,4'-DDT (0.01)	N.D.	delta-BHC (0.005)	N.D.
4,4'-DDE (0.01)	0.014	gamma-BHC(lindane)(0.005)	N.D.
4,4'-DDD (0.01)	N.D.	chlordane (0.05)	N.D.
alpha-endosulfan (0.01)	N.D.	toxaphene (0.05)	N.D.
beta-endosulfan (0.01)	N.D.	PCB-1016 (0.05)	N.D.
endosulfan sulfate (0.01)	N.D.	PCB-1221 (0.05)	N.D.
endrin (0.01)	N.D.	PCB-1232 (0.05)	N.D.
endrin aldehyde (0.01)	N.D.	PCB-1242 (0.05)	N.D.
heptachlor (0.005)	N.D.	PCB-1248 (0.05)	0.16
heptachlor epoxide (0.005)	N.D.	PCB-1254 (0.05)	N.D.
2,3,7,8-tetrachloro-dibenzo- p-dioxin (0.01)	N.D.	PCB-1260 (0.05)	0.32

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: *

Amount of Sample Extracted: 41.5 gm.

Final Extract Volume: 10 ml.

Amount of Extract Injected: 4.5-5.2 ul

*No recovery data possible due to interference from substances detected.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip Embankment Solid 2297-3

ESI #: 831249-3

NOTE: 1) All results reported as micrograms per kilogram (wet).
Total Solids = 55.5
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection
may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	N.D.	1,1,1-trichloroethane (10)	N.D.
romoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	3.3	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
rans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,104,104

ng. added, ng. recovered, % recovery of Surrogate #2: 100,116,116

Amount of sample extracted: 5.0 gm

Amount of sample injected: 5.0 gm

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip Embankment-Solid 2297-3

ESI #: 831249-3

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 55.5%
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (0.4)	N.D.	2-nitrophenol (0.4)	N.D.
2-chlorophenol (0.4)	N.D.	4-nitrophenol (0.4)	N.D.
2,4-dichlorophenol (0.4)	N.D.	2,4-dinitrophenol (1.6)	N.D.
2,4,6-trichlorophenol (0.4)	N.D.	2-methyl-4,6-dinitrophenol (2.4)	N.D.
pentachlorophenol (0.4)	N.D.	2,4-dimethylphenol (0.4)	N.D.
4-chloro-3-methylphenol (0.4)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

NONE

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100,48,48
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100,73,73
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100,79,79

Amount of Sample Extracted 26.5 gm

Final Extract Volume: 1.0 ml.

Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
 Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip Embankment-Solid 2297-3

ESI #: 831249-3

NOTE: 1) All results reported as milligrams per kilogram (wet).
 Total Solids = 55.5%
 2) N.D. means not detected.
 3) The lower Limit of Detection is indicated in parentheses.
 4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (0.4)	N.D.	dimethylphthalate (0.4)	N.D.
1,3-dichlorobenzene (0.4)	N.D.	diethylphthalate (0.4)	0.17
1,4-dichlorobenzene (0.4)	N.D.	di-n-butyl phthalate (0.4)	N.D.
1,2,4-trichlorobenzene (0.4)	N.D.	butyl benzyl phthalate (0.4)	N.D.
hexachlorocyclopentadiene (0.8)	N.D.	bis(2-ethylhexyl)phthalate(0.4)	N.D.
hexachloroethane (0.4)	N.D.	di-n-octylphthalate (0.4)	0.12
hexachlorobutadiene (0.4)	N.D.	naphthalene (0.4)	N.D.
hexachlorobenzene (0.4)	N.D.	2-chloronaphthalene (0.4)	N.D.
bis(2-chloroethyl)ether (0.4)	N.D.	acenaphthylene (0.4)	N.D.
bis(2-chloroisopropyl)ether (0.4)	N.D.	acenaphthene (0.4)	N.D.
bis(2-chloroethoxy)methane (0.4)	N.D.	phenanthrene (0.4)	N.D.
4-chlorophenylphenyl ether (0.4)	N.D.	anthracene (0.4)	N.D.
4-bromophenylphenyl ether (0.4)	N.D.	fluorene (0.4)	N.D.
isophorone (0.4)	N.D.	fluoranthene (0.4)	N.D.
nitrobenzene (0.4)	N.D.	pyrene (0.4)	N.D.
2,4-dinitrotoluene (0.4)	N.D.	chrysene (0.4)	N.D.
2,6-dinitrotoluene (0.4)	N.D.	benzo(a)anthracene (0.4)	N.D.
n-nitrosodimethylamine (0.4)	N.D.	benzo(k)fluoranthene (0.4)	N.D.
n-nitrosodiphenylamine (0.4)	0.05	benzo(b)fluoranthene (0.4)	N.D.
n-nitrosodi-n-propylamine (0.4)	N.D.	benzo(a)pyrene (0.4)	N.D.
1,2-diphenylhydrazine (0.4)	N.D.	indeno(1,2,3-cd)pyrene (0.8)	N.D.
3,3'-dichlorobenzidine (1.2)	N.D.	dibenzo(a,h)anthracene (0.8)	N.D.
benzidine (4.0)	N.D.	benzo(g,h,i)perylene (0.8)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Slip Embankment-Solid 2297-3

ESI #: 831249-3

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 55.5%
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.0002)	N.D.	alpha-BHC (0.0002)	N.D.
dieldrin (0.001)	N.D.	beta-BHC (0.0002)	N.D.
4,4'-DDT (0.001)	N.D.	delta-BHC (0.0002)	N.D.
4,4'-DDE (0.001)	0.0003	gamma-BHC(lindane)(0.0002)	N.D.
4,4'-DDD (0.001)	N.D.	chlordan (0.002)	N.D.
alpha-endosulfan (0.001)	N.D.	toxaphene (0.002)	N.D.
beta-endosulfan (0.001)	N.D.	PCB-1016 (0.002)	N.D.
endosulfan sulfate (0.001)	N.D.	PCB-1221 (0.002)	N.D.
endrin (0.001)	N.D.	PCB-1232 (0.002)	N.D.
endrin aldehyde (0.001)	N.D.	PCB-1242 (0.002)	N.D.
heptachlor (0.0002)	N.D.	PCB-1248 (0.002)	N.D.
heptachlor epoxide (0.0002)	N.D.	PCB-1254 (0.002)	N.D.
2,3,7,8-tetrachloro-dibenzo- p-dioxin (0.001)	N.D.	PCB-1260 (0.002)	0.02

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520,1640,108

Amount of Sample Extracted: 29.8 gm

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

*No recovery data possible due to interference from substances detected.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Intake 2297-4

ESI #: 831249-4

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection
may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	N.D.	1,1,1-trichloroethane (10)	N.D.
bromoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	N.D.	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
trans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,93,93

ng. added, ng. recovered, % recovery of Surrogate #2: 100,102,102

Amount of sample extracted: 5.0 ml

Amount of sample injected: 5.0 ml

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Intake-Aqueous 2297-4

ESI #: 831249-4

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (10)	N.D.	2-nitrophenol (10)	N.D.
2-chlorophenol (10)	N.D.	4-nitrophenol (10)	N.D.
2,4-dichlorophenol (10)	N.D.	2,4-dinitrophenol (40)	N.D.
2,4,6-trichlorophenol (10)	N.D.	2-methyl-4,6-dinitrophenol (60)	N.D.
pentachlorophenol (10)	N.D.	2,4-dimethylphenol (10)	N.D.
4-chloro-3-methylphenol (10)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

NONE

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100,43,43
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100,92,92
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100,89,89
Amount of Sample Extracted 1,000 ml.
Final Extract Volume: 1.0 ml.
Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Intake 2297-4

ESI #: 831249-4

NOTE: 1) All results reported as micrograms per liter
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (10)	N.D.	dimethylphthalate (10)	N.D.
1,3-dichlorobenzene (10)	N.D.	diethylphthalate (10)	2.8
1,4-dichlorobenzene (10)	N.D.	di-n-butyl phthalate (10)	N.D.
1,2,4-trichlorobenzene (10)	N.D.	butyl benzyl phthalate (10)	N.D.
hexachlorocyclopentadiene (20)	N.D.	bis(2-ethylhexyl)phthalate(10)	1.6
hexachloroethane (10)	N.D.	di-n-octylphthalate (10)	N.D.
hexachlorobutadiene (10)	N.D.	naphthalene (10)	N.D.
hexachlorobenzene (10)	N.D.	2-chloronaphthalene (10)	N.D.
bis(2-chloroethyl)ether (10)	N.D.	acenaphthylene (10)	N.D.
bis(2-chloroisopropyl)ether (10)	N.D.	acenaphthene (10)	N.D.
bis(2-chloroethoxy)methane (10)	N.D.	phenanthrene (10)	N.D.
4-chlorophenylphenyl ether (10)	N.D.	anthracene (10)	N.D.
bromophenylphenyl ether (10)	N.D.	fluorene (10)	N.D.
isophorone (10)	N.D.	fluoranthene (10)	N.D.
nitrobenzene (10)	N.D.	pyrene (10)	N.D.
2,4-dinitrotoluene (10)	N.D.	chrysene (10)	N.D.
2,6-dinitrotoluene (10)	N.D.	benzo(a)anthracene (10)	N.D.
n-nitrosodimethylamine (10)	N.D.	benzo(k)fluoranthene (10)	N.D.
n-nitrosodiphenylamine (10)	N.D.	benzo(b)fluoranthene (10)	N.D.
n-nitrosodi-n-propylamine (10)	N.D.	benzo(a)pyrene (10)	N.D.
1,2-diphenylhydrazine (10)	N.D.	indeno(1,2,3-cd)pyrene (20)	N.D.
3,3'-dichlorobenzidine (30)	N.D.	dibenzo(a,h)anthracene (20)	N.D.
benzidine (100)	N.D.	benzo(g,h,i)perylene (20)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Allied Intake-Aqueous 2297-4

ESI #: 831249-4

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.01)	N.D.	alpha-BHC (0.01)	N.D.
dieldrin (0.01)	N.D.	beta-BHC (0.01)	N.D.
4,4'-DDT (0.01)	N.D.	delta-BHC (0.01)	N.D.
1'-DDE (0.01)	N.D.	gamma-BHC(lindane)(0.01)	N.D.
4,4'-DDD (0.01)	N.D.	chlordane (0.05)	N.D.
alpha-endosulfan (0.01)	N.D.	toxaphene (0.05)	N.D.
beta-endosulfan (0.01)	N.D.	PCB-1016 (0.05)	N.D.
endosulfan sulfate (0.01)	N.D.	PCB-1221 (0.05)	N.D.
endrin (0.01)	N.D.	PCB-1232 (0.05)	N.D.
endrin aldehyde (0.01)	N.D.	PCB-1242 (0.05)	N.D.
heptachlor (0.01)	N.D.	PCB-1248 (0.05)	N.D.
heptachlor epoxide (0.01)	N.D.	PCB-1254 (0.05)	N.D.
2,3,7,8-tetrachloro-dibenzo- p-dioxin (0.01)	N.D.	PCB-1260 (0.05)	N.D.

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520, 1550, 102

Amount of Sample Extracted: 1000 ml

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Outfall 002 2297-5

ESI #: 831249-5

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	N.D.	1,1,1-trichloroethane (10)	N.D.
bromoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	1.5	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
trans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,100,100

ng. added, ng. recovered, % recovery of Surrogate #2: 100,112,112

Amount of sample extracted: 5.0 ml

Amount of sample injected: 5.0 ml

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Outfall 002 2297-5

ESI #: 831249-5

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (10)	N.D.	2-nitrophenol (10)	N.D.
2-chlorophenol (10)	N.D.	4-nitrophenol (10)	N.D.
2,4-dichlorophenol (10)	N.D.	2,4-dinitrophenol (40)	N.D.
2,4,6-trichlorophenol (10)	N.D.	2-methyl-4,6-dinitrophenol (60)	N.D.
pentachlorophenol (10)	N.D.	2,4-dimethylphenol (10)	N.D.
4-chloro-3-methylphenol (10)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

NONE

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100,22,22
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100,85,85
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100,89,89
Amount of Sample Extracted 1,000 ml.
Final Extract Volume: 1.0 ml.
Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Outfall 002 2297-5

ESI #: 831249-5

NOTE: 1) All results reported as micrograms per liter
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (10)	N.D.	dimethylphthalate (10)	N.D.
1,3-dichlorobenzene (10)	N.D.	diethylphthalate (10)	3.2
1,4-dichlorobenzene (10)	N.D.	di-n-butyl phthalate (10)	N.D.
1,2,4-trichlorobenzene (10)	N.D.	butyl benzyl phthalate (10)	N.D.
hexachlorocyclopentadiene (20)	N.D.	bis(2-ethylhexyl)phthalate(10)	5.6
hexachloroethane (10)	N.D.	di-n-octylphthalate (10)	N.D.
hexachlorobutadiene (10)	N.D.	naphthalene (10)	N.D.
hexachlorobenzene (10)	N.D.	2-chloronaphthalene (10)	N.D.
bis(2-chloroethyl)ether (10)	N.D.	acenaphthylene (10)	N.D.
bis(2-chloroisopropyl)ether (10)	N.D.	acenaphthene (10)	N.D.
bis(2-chloroethoxy)methane (10)	N.D.	phenanthrene (10)	N.D.
4-chlorophenylphenyl ether (10)	N.D.	anthracene (10)	N.D.
-bromophenylphenyl ether (10)	N.D.	fluorene (10)	N.D.
isophorone (10)	N.D.	fluoranthene (10)	N.D.
nitrobenzene (10)	N.D.	pyrene (10)	N.D.
2,4-dinitrotoluene (10)	N.D.	chrysene (10)	N.D.
2,6-dinitroltoluene (10)	N.D.	benzo(a)anthracene (10)	N.D.
n-nitrosodimethylamine (10)	N.D.	benzo(k)fluoranthene (10)	N.D.
n-nitrosodiphenylamine (10)	N.D.	benzo(b)fluoranthene (10)	N.D.
n-nitrosodi-n-propylamine (10)	N.D.	benzo(a)pyrene (10)	N.D.
1,2-diphenylhydrazine (10)	N.D.	indeno(1,2,3-cd)pyrene (20)	N.D.
3,3'-dichlorobenzidine (30)	N.D.	dibenzo(a,h)anthracene (20)	N.D.
benzidine (100)	N.D.	benzo(g,h,i)perylene (20)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: Janaury 19, 1984

SAMPLE: Outfall 002-Aqueous 2297-5

ESI #: 831249-5

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.01)	N.D.	alpha-BHC (0.01)	N.D.
dieldrin (0.01)	N.D.	beta-BHC (0.01)	N.D.
4,4'-DDT (0.01)	N.D.	delta-BHC (0.01)	N.D.
4,4'-DDE (0.01)	N.D.	gamma-BHC(lindane)(0.01)	N.D.
4,4'-DDD (0.01)	N.D.	chlordan (0.05)	N.D.
alpha-endosulfan (0.01)	N.D.	toxaphene (0.05)	N.D.
beta-endosulfan (0.01)	N.D.	PCB-1016 (0.05)	N.D.
endosulfan sulfate (0.01)	N.D.	PCB-1221 (0.05)	N.D.
endrin (0.01)	N.D.	PCB-1232 (0.05)	N.D.
endrin aldehyde (0.01)	N.D.	PCB-1242 (0.05)	N.D.
heptachlor (0.01)	N.D.	PCB-1248 (0.05)	N.D.
heptachlor epoxide (0.01)	N.D.	PCB-1254 (0.05)	N.D.
2,3,7,8-tetrachloro-dibenzo-		PCB-1260 (0.05)	N.D.
dioxin (0.01)	N.D.		

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520, 1310, 86

Amount of Sample Extracted: 1000 ml

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Outfall 001 2297-6

ESI #: 831249-6

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	1.4	1,1,1-trichloroethane (10)	N.D.
bromoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	1.4	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
trans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,110,110

ng. added, ng. recovered, % recovery of Surrogate #2: 100,124,124

Amount of sample extracted: 5.0 ml

Amount of sample injected: 5.0 ml

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Outfall 001 2297-6

ESI #: 831249-6

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (10)	N.D.	2-nitrophenol (10)	N.D.
2-chlorophenol (10)	N.D.	4-nitrophenol (10)	N.D.
2,4-dichlorophenol (10)	N.D.	2,4-dinitrophenol (40)	N.D.
2,4,6-trichlorophenol (10)	N.D.	2-methyl-4,6-dinitrophenol (60)	N.D.
pentachlorophenol (10)	N.D.	2,4-dimethylphenol (10)	N.D.
4-chloro-3-methylphenol (10)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

NONE

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100,24,24
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100,67,67
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100,72,72
Amount of Sample Extracted 1,000 ml.
Final Extract Volume: 1.0 ml.
Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Outfall 001 2297-6

ESI #: 831249-6

NOTE: 1) All results reported as micrograms per liter
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (10)	N.D.	dimethylphthalate (10)	N.D.
1,3-dichlorobenzene (10)	N.D.	diethylphthalate (10)	4.8
1,4-dichlorobenzene (10)	N.D.	di-n-butyl phthalate (10)	1.1.
1,2,4-trichlorobenzene (10)	N.D.	butyl benzyl phthalate (10)	N.D.
hexachlorocyclopentadiene (20)	N.D.	bis(2-ethylhexyl)phthalate(10)	3.1
hexachloroethane (10)	N.D.	di-n-octylphthalate (10)	N.D.
hexachlorobutadiene (10)	N.D.	naphthalene (10)	N.D.
hexachlorobenzene (10)	N.D.	2-chloronaphthalene (10)	N.D.
bis(2-chloroethyl)ether (10)	N.D.	acenaphthylene (10)	N.D.
bis(2-chloroisopropyl)ether (10)	N.D.	acenaphthene (10)	N.D.
bis(2-chloroethoxy)methane (10)	N.D.	phenanthrene (10)	N.D.
4-chlorophenylphenyl ether (10)	N.D.	anthracene (10)	N.D.
4-bromophenylphenyl ether (10)	N.D.	fluorene (10)	N.D.
isophorone (10)	N.D.	fluoranthene (10)	N.D.
nitrobenzene (10)	N.D.	pyrene (10)	N.D.
2,4-dinitrotoluene (10)	N.D.	chrysene (10)	N.D.
2,6-dinitrotoluene (10)	N.D.	benzo(a)anthracene (10)	N.D.
n-nitrosodimethylamine (10)	N.D.	benzo(k)fluoranthene (10)	N.D.
n-nitrosodiphenylamine (10)	N.D.	benzo(b)fluoranthene (10)	N.D.
n-nitrosodi-n-propylamine (10)	N.D.	benzo(a)pyrene (10)	N.D.
1,2-diphenylhydrazine (10)	N.D.	indeno(1,2,3-cd)pyrene (20)	N.D.
3,3'-dichlorobenzidine (30)	N.D.	dibenzo(a,h)anthracene (20)	N.D.
benzidine (100)	N.D.	benzo(g,h,i)perylene (20)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: Janaury 19, 1984

SAMPLE: Outfall 001-Aqueous 2297-6

ESI #: 831249-6

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.01)	N.D.	alpha-BHC (0.01)	N.D.
dieldrin (0.01)	N.D.	beta-BHC (0.01)	N.D.
4,4'-DDT (0.01)	N.D.	delta-BHC (0.01)	N.D.
4'-DDE (0.01)	N.D.	gamma-BHC(lindane)(0.01)	N.D.
4,4'-DDD (0.01)	N.D.	chlordane (0.05)	N.D.
alpha-endosulfan (0.01)	N.D.	toxaphene (0.05)	N.D.
beta-endosulfan (0.01)	N.D.	PCB-1016 (0.05)	N.D.
endosulfan sulfate (0.01)	N.D.	PCB-1221 (0.05)	N.D.
endrin (0.01)	N.D.	PCB-1232 (0.05)	N.D.
endrin aldehyde (0.01)	N.D.	PCB-1242 (0.05)	N.D.
heptachlor (0.01)	N.D.	PCB-1248 (0.05)	N.D.
heptachlor epoxide (0.01)	N.D.	PCB-1254 (0.05)	N.D.
2,3,7,8-tetrachloro-dibenzo- p-dioxin (0.01)	N.D.	PCB-1260 (0.05)	N.D.

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520,1410,93

Amount of Sample Extracted: 1000 ml

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Aqueous 2297-7

ESI #: 831249-7

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	1.1	1,1,1-trichloroethane (10)	N.D.
bromoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	N.D.
methylene chloride (10)	4.6	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
trans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,104,104

ng. added, ng. recovered, % recovery of Surrogate #2: 100,108,108

Amount of sample extracted: 5.0 ml

Amount of sample injected: 5.0 ml

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Aqueous 2297-7

ESI #: 831249-7

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (10)	N.D.	2-nitrophenol (10)	N.D.
2-chlorophenol (10)	N.D.	4-nitrophenol (10)	N.D.
2,4-dichlorophenol (10)	N.D.	2,4-dinitrophenol (40)	N.D.
2,4,6-trichlorophenol (10)	N.D.	2-methyl-4,6-dinitrophenol (60)	N.D.
pentachlorophenol (10)	N.D.	2,4-dimethylphenol (10)	N.D.
4-chloro-3-methylphenol (10)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

NONE

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100,20,20
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100,85,85
ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100,86,86
Amount of Sample Extracted 1,000 ml.
Final Extract Volume: 1.0 ml.
Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Aqueous 2297-7

ESI #: 831249-7

NOTE: 1) All results reported as micrograms per liter
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (10)	N.D.	dimethylphthalate (10)	N.D.
1,3-dichlorobenzene (10)	N.D.	diethylphthalate (10)	4.1
1,4-dichlorobenzene (10)	N.D.	di-n-butyl phthalate (10)	N.D.
1,2,4-trichlorobenzene (10)	N.D.	butyl benzyl phthalate (10)	N.D.
hexachlorocyclopentadiene (20)	N.D.	bis(2-ethylhexyl)phthalate(10)	1.4
hexachloroethane (10)	N.D.	di-n-octylphthalate (10)	N.D.
hexachlorobutadiene (10)	N.D.	naphthalene (10)	N.D.
hexachlorobenzene (10)	N.D.	2-chloronaphthalene (10)	N.D.
bis(2-chloroethyl)ether (10)	N.D.	acenaphthylene (10)	N.D.
bis(2-chloroisopropyl)ether (10)	N.D.	acenaphthene (10)	N.D.
bis(2-chloroethoxy)methane (10)	N.D.	phenanthrene (10)	N.D.
4-chlorophenylphenyl ether (10)	N.D.	anthracene (10)	N.D.
-bromophenylphenyl ether (10)	N.D.	fluorene (10)	N.D.
isophorone (10)	N.D.	fluoranthene (10)	N.D.
nitrobenzene (10)	N.D.	pyrene (10)	N.D.
2,4-dinitrotoluene (10)	N.D.	chrysene (10)	N.D.
2,6-dinitroltoluene (10)	N.D.	benzo(a)anthracene (10)	N.D.
n-nitrosodimethylamine (10)	N.D.	benzo(k)fluoranthene (10)	N.D.
n-nitrosodiphenylamine (10)	N.D.	benzo(b)fluoranthene (10)	N.D.
n-nitrosodi-n-propylamine (10)	N.D.	benzo(a)pyrene (10)	N.D.
1,2-diphenylhydrazine (10)	N.D.	indeno(1,2,3-cd)pyrene (20)	N.D.
3,3'-dichlorobenzidine (30)	N.D.	dibenzo(a,h)anthracene (20)	N.D.
benzidine (100)	N.D.	benzo(g,h,i)perylene (20)	N.D.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Aqueous 2297-7

ESI #: 831249-7

NOTE: 1) All results reported as micrograms per liter.
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.01)	N.D.	alpha-BHC (0.01)	N.D.
dieldrin (0.01)	N.D.	beta-BHC (0.01)	N.D.
4,4'-DDT (0.01)	N.D.	delta-BHC (0.01)	N.D.
4'-DDE (0.01)	N.D.	gamma-BHC(lindane)(0.01)	N.D.
4,4'-DDD (0.01)	N.D.	chlordan (0.05)	N.D.
alpha-endosulfan (0.01)	N.D.	toxaphene (0.05)	N.D.
beta-endosulfan (0.01)	N.D.	PCB-1016 (0.05)	N.D.
endosulfan sulfate (0.01)	N.D.	PCB-1221 (0.05)	N.D.
endrin (0.01)	N.D.	PCB-1232 (0.05)	N.D.
endrin aldehyde (0.01)	N.D.	PCB-1242 (0.05)	N.D.
heptachlor (0.01)	N.D.	PCB-1248 (0.05)	N.D.
heptachlor epoxide (0.01)	N.D.	PCB-1254 (0.05)	N.D.
2,3,7,8-tetrachloro-dibenzo- p-dioxin (0.01)	N.D.	PCB-1260 (0.05)	N.D.

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520,1490,98

Amount of Sample Extracted: 1000 ml

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Solid 2297-8

ESI #: 831249-8

NOTE: 1) All results reported as micrograms per kilogram (wet).
Total Solids = 0
2) N.D. indicates not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of detection
may not be as accurate.

VOLATILE ORGANIC PRIORITY POLLUTANTS

chloroform (10)	N.D.	1,1,1-trichloroethane (10)	N.D.
bromoform (10)	N.D.	cis-1,3-dichloropropene (10)	N.D.
chlorodibromomethane (10)	N.D.	trans-1,3-dichloropropene (10)	N.D.
bromodichloromethane (10)	N.D.	1,1,2,2-tetrachloroethane (10)	1.1
methylene chloride (10)	7.9	2-chloroethyl vinyl ether (10)	N.D.
1,1-dichloroethylene (10)	N.D.	chlorobenzene (10)	N.D.
1,1-dichloroethane (10)	N.D.	benzene (10)	N.D.
carbon tetrachloride (10)	N.D.	toluene (10)	N.D.
1,2-dichloropropane (10)	N.D.	ethyl benzene (10)	N.D.
trichloroethylene (10)	N.D.	chloromethane (10)	N.D.
1,1,2-trichloroethane (10)	N.D.	bromomethane (10)	N.D.
tetrachloroethylene (10)	N.D.	vinyl chloride (10)	N.D.
trans-1,2-dichloroethylene (10)	N.D.	chloroethane (10)	N.D.
1,2-dichloroethane (10)	N.D.	acrolein (100)	N.D.
		acrylonitrile (100)	N.D.

OTHER VOLATILE ORGANICS:

NONE

ng. added, ng. recovered, % recovery of Surrogate #1: 100,98,98

ng. added, ng. recovered, % recovery of Surrogate #2: 100,109,109

Amount of sample extracted: 5.0 gm

Amount of sample injected: 5.0 gm

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Solid 2297-8

ESI #: 831249-8

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 0

2) N.D. indicates not detected.

3) The lower Limit of Detection is indicated in parentheses.

4) Reported values that are less than the lower Limit of Detection may not be as accurate.

ACID EXTRACTABLE PRIORITY POLLUTANTS:

phenol (0.4)	N.D.	2-nitrophenol (0.4)	N.D.
chlorophenol (0.4)	N.D.	4-nitrophenol (0.4)	N.D.
2,4-dichlorophenol (0.4)	N.D.	2,4-dinitrophenol (1.6)	N.D.
2,4,6-trichlorophenol (0.4)	N.D.	2-methyl-4,6-dinitrophenol (2.4)	N.D.
pentachlorophenol (0.4)	N.D.	2,4-dimethylphenol (0.4)	N.D.
4-chloro-3-methylphenol (0.4)	N.D.		

OTHER ACID AND BASE-NEUTRAL EXTRACTABLES:

ethanol, 2-(2-(2-ethoxyethoxy)ethoxy)- 0.2

ug. added, ug. recovered, % recovery of Acid-Extractable Surrogate: 100, 71, 71

ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #1: 100, 94, 94

ug. added, ug. recovered, % recovery of Base-Neutral Surrogate #2: 100, 86, 86

Amount of Sample Extracted 50 gm

Final Extract Volume: 1.0 ml.

Amount of Extract Injected: 1.0 ul.

TO: NUS Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Solid 2297-8

ESI #: 831249-8

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 0
2) N.D. means not detected.
3) The lower Limit of Detection is indicated in parentheses.
4) Reported values that are less than the lower Limit of Detection may not be as accurate.

BASE NEUTRAL EXTRACTABLE PRIORITY POLLUTANTS:

1,2-dichlorobenzene (0.4)	N.D.	dimethylphthalate (0.4)	N.D.
1,3-dichlorobenzene (0.4)	N.D.	diethylphthalate (0.4)	0.13
1,4-dichlorobenzene (0.4)	N.D.	di-n-butyl phthalate (0.4)	0.03
1,2,4-trichlorobenzene (0.4)	N.D.	butyl benzyl phthalate (0.4)	N.D.
hexachlorocyclopentadiene (0.8)	N.D.	bis(2-ethylhexyl)phthalate(0.4)	0.03
hexachloroethane (0.4)	N.D.	di-n-octylphthalate (0.4)	N.D.
hexachlorobutadiene (0.4)	N.D.	naphthalene (0.4)	N.D.
hexachlorobenzene (0.4)	N.D.	2-chloronaphthalene (0.4)	N.D.
bis(2-chloroethyl)ether (0.4)	N.D.	acenaphthylene (0.4)	N.D.
bis(2-chloroisopropyl)ether (0.4)	N.D.	acenaphthene (0.4)	N.D.
bis(2-chloroethoxy)methane (0.4)	N.D.	phenanthrene (0.4)	N.D.
chlorophenylphenyl ether (0.4)	N.D.	anthracene (0.4)	N.D.
4-bromophenylphenyl ether (0.4)	N.D.	fluorene (0.4)	N.D.
isophorone (0.4)	N.D.	fluoranthene (0.4)	N.D.
nitrobenzene (0.4)	N.D.	pyrene (0.4)	N.D.
2,4-dinitrotoluene (0.4)	N.D.	chrysene (0.4)	N.D.
2,6-dinitrotoluene (0.4)	N.D.	benzo(a)anthracene (0.4)	N.D.
n-nitrosodimethylamine (0.4)	N.D.	benzo(k)fluoranthene (0.4)	N.D.
n-nitrosodiphenylamine (0.4)	N.D.	benzo(b)fluoranthene (0.4)	N.D.
n-nitrosodi-n-propylamine (0.4)	N.D.	benzo(a)pyrene (0.4)	N.D.
1,2-diphenylhydrazine (0.4)	N.D.	indeno(1,2,3-cd)pyrene (0.8)	N.D.
3,3'-dichlorobenzidine (1.2)	N.D.	dibenzo(a,h)anthracene (0.8)	N.D.
benzidine (4.0)	N.D.	benzo(g,h,i)perylene (0.8)	N.D.

TO: Nus Corporation
Re: Case #2297

DATE: January 19, 1984

SAMPLE: Blank-Solid 2297-8

ESI #: 831249-8

NOTE: 1) All results reported as milligrams per kilogram (wet).
Total Solids = 0
2) N.D. indicates not detected
3) The lower Limit of Detection is indicated in parentheses.

PESTICIDE AND PCB PRIORITY POLLUTANTS:

aldrin (0.0004)	N.D.	alpha-BHC (0.0004)	N.D.
dieldrin (0.0004)	N.D.	beta-BHC (0.0004)	N.D.
4'-DDT (0.0004)	N.D.	delta-BHC (0.0004)	N.D.
4,4'-DDE (0.0004)	N.D.	gamma-BHC(lindane)(0.0004)	N.D.
4,4'-DDD (0.0004)	N.D.	chlordan (0.0004)	N.D.
alpha-endosulfan (0.0004)	N.D.	toxaphene (0.0004)	N.D.
beta-endosulfan (0.0004)	N.D.	PCB-1016 (0.0004)	N.D.
endosulfan sulfate (0.0004)	N.D.	PCB-1221 (0.0004)	N.D.
endrin (0.0004)	N.D.	PCB-1232 (0.0004)	N.D.
endrin aldehyde (0.0004)	N.D.	PCB-1242 (0.0004)	N.D.
heptachlor (0.0004)	N.D.	PCB-1248 (0.0004)	N.D.
heptachlor epoxide (0.0004)	N.D.	PCB-1254 (0.0004)	N.D.
2,3,7,8-tetrachloro-dibenzo-		PCB-1260 (0.0004)	N.D.
-dioxin (0.0004)	N.D.		

ng. added, ng. recovered, % recovery of Pesticide/PCB Surrogate: 1520,1570,103

Amount of Sample Extracted: 50 gm

Final Extract Volume: 1.0 ml

Amount of Extract Injected: 4.5-5.2 ul

RECEIVED

US ENVIRONMENTAL PROTECTION AGENCY
 HWI Sample Management Office
 P.O. Box 818 - Alexandria, Virginia 22313
 703/557-2490 FTS 8-557-2490

JAN 27 1984

NUS CORPORATION
 REGION III

Sample No.

MC2132

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH

CASE NO. 2297

LAB SAMPLE ID. NO. G2-145-01

QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Aluminum	2250
2. Chromium	2476
3. Barium	<100
Beryllium	<5
5. Cobalt	<50
6. Copper	<50
7. Iron	4087
8. Nickel	<40
9. Manganese	105

	ug/l or mg/kg (circle one)
10. Zinc	37
11. Boron	317
12. Vanadium	<200
13. Silver	<10

TASK 2 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Arsenic	6589 <10
2. Antimony	<20 out
3. Selenium	<2.0 out
4. Thallium	<10 out

	ug/l or mg/kg (circle one)
5. Mercury	10.20 out
6. Tin	<20 out
7. Cadmium	2.0
8. Lead	13.

TASK 3 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Ammonia	
2. Cyanide	10
3. Sulfide	

COMMENTS:

Alchiff 1/26/84

Sample No.
MC2133

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH

CASE NO. 2297

LAB SAMPLE ID. NO. G2-145-02

QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Aluminum	<u>7570</u>
2. Chromium	<u>2460</u>
3. Barium	<u>10.7</u>
4. Beryllium	<u>1.2</u>
5. Cobalt	<u>22.</u>
6. Copper	<u>10.5 x 10³</u>
7. Iron	<u>16390</u> 14,370 <u>10³</u>
8. Nickel	<u>74.</u>
9. Manganese	<u>208.</u>

	ug/l or mg/kg (circle one)
10. Zinc	<u>75.</u>
11. Boron	<u>15.6</u>
12. Vanadium	<u>185.</u>
13. Silver	<u><0.5</u>

TASK 2 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Arsenic	<u>2.1</u> <0.5 <u>10³</u>
2. Antimony	<u><1.0</u>
3. Selenium	<u><0.10</u>
4. Thallium	<u><0.50</u>

	ug/l or mg/kg (circle one)
5. Mercury	<u><0.10</u>
6. Tin	<u><1.0</u>
7. Cadmium	<u>0.16</u>
8. Lead	<u>21.0</u>

TASK 3 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Ammonia	
2. Cyanide	<u>0.95</u>
3. Sulfide	

COMMENTS:

Aschaffner Tuffy

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH
LAB SAMPLE ID. NO. G2-145-03

CASE NO. 2297
QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Aluminum	<u>19,700</u>
2. Chromium	<u>3230</u>
3. Barium	<u>15.0</u>
4. Beryllium	<u>5.2</u>
5. Cadmium	<u>87.</u>
6. Copper	<u>6.3</u>
7. Iron	<u>53,000</u>
8. Nickel	<u>292.</u>
9. Manganese	<u>543.</u>

	ug/l or mg/kg (circle one)
10. Zinc	<u>189.</u>
11. Boron	<u>62.</u>
12. Vanadium	<u>762.</u>
13. Silver	<u><0.50</u>

TASK 2 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Arsenic	<u>0.90</u> ^{0.90} <0.50 0.99
2. Antimony	<u><1.0</u>
3. Bismuth	<u><0.10</u>
4. Thallium	<u><0.50</u>

	ug/l or mg/kg (circle one)
5. Mercury	<u><0.10</u>
6. Tin	<u><1.0</u>
7. Cadmium	<u>2.767</u> 0.22
8. Lead	<u>60.</u>

TASK 3 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Ammonia	
2. Cyanide	<u>0.68</u>
3. Sulfide	

COMMENTS:

Abeloffner Yurky

Sample No.

MC 2135 *6/24*

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH

CASE NO. 2297

LAB SAMPLE ID. NO. G2-145-041

QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Aluminum	177
2. Chromium	371
3. Barium	<100
4. Beryllium	<5
5. Cobalt	<50
6. Copper	<50
7. Iron	301
8. Nickel	<40
9. Manganese	82

	<u>ug/l or mg/kg</u> (circle one)
10. Zinc	<10
11. Boron	761
12. Vanadium	<200
13. Silver	<10

TASK 2 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Arsenic	<10
2. Antimony	<20
3. Selenium	<2.0
4. Thallium	<10

	<u>ug/l or mg/kg</u> (circle one)
5. Mercury	<0.20
6. Tin	<20
7. Cadmium	<1.0
8. Lead	<5.0

TASK 3 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Ammonia	
2. Cyanide	28
3. Sulfide	

COMMENTS:

Aschaffner 1/26/84

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH
LAB SAMPLE ID. NO. G2-145-05

CASE NO. 2297
QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

ug/l or mg/kg
(circle one)

1. Aluminum	234
2. Chromium	414
3. Barium	<100
4. Beryllium	<5
5. Cobalt	<50
6. Copper	<50
7. Iron	260
8. Nickel	<40
9. Manganese	91

ug/l or mg/kg
(circle one)

10. Zinc	11
11. Boron	733
12. Vanadium	<200
13. Silver	510

TASK 2 (Elements to be Identified and Measured)

ug/l or mg/kg
(circle one)

1. Arsenic	<40
2. Antimony	<20
3. Selenium	<2.0
4. Thallium	<10

ug/l or mg/kg
(circle one)

5. Mercury	<0.20
6. Tin	<20
7. Cadmium	<1.0
8. Lead	8.3

TASK 3 (Elements to be Identified and Measured)

ug/l or mg/kg
(circle one)

1. Ammonia	
2. Cyanide	<10
3. Sulfide	

COMMENTS:

Aschaffner 1/20/84

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH

CASE NO. 2297

LAB SAMPLE ID. NO. G2-145-06

QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Aluminum	190
2. Chromium	530
3. Barium	<100
4. Beryllium	<5
5. Cobalt	<50
6. Copper	<50
7. Iron	269
8. Nickel	<40
9. Manganese	78

	<u>ug/l or mg/kg</u> (circle one)
10. Zinc	13
11. Boron	682
12. Vanadium	<200
13. Silver	<10

TASK 2 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Arsenic	<10
2. Antimony	<20
3. Selenium	<2.0
4. Thallium	<10

	<u>ug/l or mg/kg</u> (circle one)
5. Mercury	<0.20
6. Tin	<20
7. Cadmium	<1.0
8. Lead	8.3

TASK 3 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Ammonia	
2. Cyanide	<10
3. Sulfide	

COMMENTS:

ASchloffer 1/2/94

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH
LAB SAMPLE ID. NO. G2-145-07

CASE NO. 2297
QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Aluminum	<100
Chromium	<10
3. Barium	<100
Beryllium	<5
5. Cobalt	<50
Copper	<50
7. Iron	<50
Nickel	<40
9. Manganese	<10

	<u>ug/l or mg/kg</u> (circle one)
10. Zinc	<10
11. Boron	<100
12. Vanadium	<200
13. Silver	<10

TASK 2 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Arsenic	<10
2. Antimony	<20
3. Selenium	<20
4. Thallium	<10

	<u>ug/l or mg/kg</u> (circle one)
5. Mercury	<0.20
6. Tin	<20
7. Cadmium	<1.0
8. Lead	<5.0

TASK 3 (Elements to be Identified and Measured)

	<u>ug/l or mg/kg</u> (circle one)
1. Ammonia	
2. Cyanide	<10
3. Sulfide	

COMMENTS:

ASchaffner 1/2/84

INORGANICS ANALYSIS DATA SHEET

LAB NAME CHEMTECH

CASE NO. 2297

LAB SAMPLE ID. NO. G2-145-08

QC REPORT NO. 145

TASK 1 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Aluminum	< 5.0
2. Chromium	< 0.50
3. Barium	< 5.0
4. Beryllium	< 0.25
5. Cadmium	< 2.5
6. Copper	< 2.5
7. Iron	< 2.5
8. Nickel	< 2.0
9. Manganese	< 0.5

	ug/l or mg/kg (circle one)
10. Zinc	< 0.5
11. Boron	< 5.0
12. Vanadium	< 10.0
13. Silver	< 0.50

TASK 2 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Arsenic	< 0.50
2. Antimony	< 1.0
3. Selenium	< 0.10
4. Thallium	< 0.50

	ug/l or mg/kg (circle one)
5. Mercury	< 0.10
6. Tin	< 1.0
7. Cadmium	< 0.05
8. Lead	< 0.25

TASK 3 (Elements to be Identified and Measured)

	ug/l or mg/kg (circle one)
1. Ammonia	
2. Cyanide	< 0.25
3. Sulfide	

COMMENTS:

ASchloffen 1/21/84

APPENDIX F

HAZARDOUS WASTE SITE ASSESSMENT

FINAL REPORT

ALLIED CHEMICAL CORP.
BLOCK AND WILLS PLANT
Baltimore, MD

MD-13

JRB NO.: 02-817-03-513-36

PREPARED FOR: U.S. EPA, REGION III
MD DEPT HEALTH AND MENTAL HYGIENE

PREPARED BY: JRB ASSOCIATES
WASTE MANAGEMENT DIVISION
8400 WESTPARK DRIVE
MC LEAN, VIRGINIA 22102

DATE: February 2, 1982

AUTHORIZATION

This report was prepared under the auspices of the U.S. Environmental Protection Agency Technical Assistance Panels program. The Panels are authorized by Section 2003 of The Resource Conservation and Recovery Act of 1976 (RCRA), Public Law 94-580, requiring the U.S.E.P.A. to "provide teams of personnel, including federal, state and local employees or contractor . . . to provide states and local governments upon request with technical assistance on solid waste management, resource recovery and resource conservation." JRB Associates is the Panels contractor for EPA Region III. JRB Associates was directed to assist The Maryland Department of Health and Mental Hygiene in conducting its "Dumpsite Assessment: program. This report documents work conducted by JRB as part of this program.

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- 4.0 Conclusions and Recommendations

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- Appendix A: Eckhardt Report Introduction and Site Description
- Appendix B: Area and Site Maps
- Appendix C: Documentation of Subsurface Water Contamination
- Appendix D: Form T2070-2 - USEPA Potential Hazardous Waste Site Identification and Preliminary Assessment
- Appendix E: Mitre Model Rating and Justification

1.0 SUMMARY AND RECOMMENDATIONS

Summary

Allied Chemical Corporation owns and operates a chemical processing and manufacturing facility at Block and Wills Street in Baltimore, Maryland. The site is visible from Baltimore's Inner Harbor Center, and covers approximately 20 acres (see map B-2). The plant imports chromite ore, extracts chromium and produces chromium containing chemicals including ammonium di-chromate, potassium - and sodium chromates and di-chromates, and chromic acid.¹ The production process generates chromite ore tailings, which contain hexavalent chromium, a toxic heavy metal. In 1980, the facility generated approximately 128,000 tons of chromite ore tailings, which were disposed at BFI's Solley Road Landfill, and the Maryland Environmental Service (MES) Hawkins Point Landfill.² The Allied facility is inspected regularly by Maryland officials, and currently holds necessary Federal and state permits, including a NPDES Permit. The only violations recorded to date have been NPDES violations, and infractions against trucks hauling the chromite ore tailings from the site. Allied has notified as a RCRA hazardous waste generator (EPA ID# MD069396711).

The Waste Disposal Site Survey prepared by the Subcommittee on Oversight and Foreign Commerce (The Eckhardt Report) listed the site as having been used for disposal of 6800 tons of chromite ore tailings through 1978.³ Background data was collected and analyzed during the period 10/22/81 to 11/17/81. Based on the information collected during this period, the following conclusions are made:

1. Portions of the site consist of chromite ore tailings, and that at least 6800 tons of tailings, as reported in the Eckhardt Report, are probably disposed on-site.

¹Directory of Maryland Manufacturers. 1979-1980. Dept. of Economic and Community Development. State of Maryland. August, 1979.

²Manifest Records. Maryland Department of Health and Mental Hygiene. 1980.

³Waste Disposal Site Survey. Subcommittee on Oversight and Investigations, Committee on Interstate and Foreign Commerce. House of Representatives. 1979.

2. Subsurface water underlying the facility site is contaminated with Cr (IV)
3. Surface water contamination is the most probable route of contaminant migration.
4. Groundwater of the Patuxent Formation is probably not being contaminated by chromite ore tailings disposed at this site.

Based upon these conclusions, the following recommendation is made:

1. The contamination of subsurface water under the Allied plant with Cr⁺⁶ is cause for concern. This contaminated water may migrate to the Baltimore Harbor, enter the Patapsco River and subsequently the Chesapeake Bay. For this reason, water samples should be taken at regular intervals from the Harbor at points near the Block and Wills Streets facility.⁺⁶ These samples should be tested for the presence of Cr⁺⁶. Both U.S. EPA Region III and the state should be informed of the results of this sampling. Further measures to seal off the chromite ore tailings from the harbor may be necessary if significant concentrations of Cr⁺⁶ are migrating from the site.

2.0 BACKGROUND INFORMATION

Allied Chemical Corporation has operated a chromium chemicals manufacturing plant, located at Block and Wills Streets in Baltimore, Maryland, since the 1950's. Chromium chemicals have been manufactured at the site by various parties since the mid 1800's. At the facility, chromite ore is processed, removing the chromium, and generating chromite ore tailings containing some heavy metals and Cr^{+6} . The chromium is used to make several chemical products, including ammonium di-chromate, potassium- and sodium-chromates, potassium and sodium di-chromates, chromic acid. The chromite ore tailings, 128,000 tons of which were generated in 1980, are disposed at BFI's Solley Road Landfill and at the MES Hawkins Point Landfill, which is operated exclusively for disposal of Allied's waste.

The chromite ore tailings that have been generated at the site for the past 100 years have been used to reclaim large portions of the Baltimore Harbor.¹ The tailings are attractive as fill because they compact well and can support a substantial weight.

Areas along both sides of the Northwest Branch of Baltimore Harbor, and surrounding the Dundalk Marine Terminal, consist of chromite ore tailings used as fill material. Of the approximately 20 acres owned by Allied at the Block and Wills Streets site, up to 7 or 8 acres probably consist of chromite ore tailings. This estimate is based upon discussion with Allied officials, and examination of original shoreline maps.²

There is documentation that the subsurface water underlying the Allied facility, is heavily contaminated with Cr^{+6} ³ (see Appendix C). In 1978, the discharge from one of Allied's NPDES outfalls registered a high concentration of Cr^{+6} (6.6 lbs. Cr^{+6} /24 Hrs.). While investigating the incident, Allied found that heavy rains over the previous few days had allowed

¹ Various newspaper reports, historical studies and unpublished reports.

² Map of Baltimore Showing Original Shorelines and Drainage. Bureau of Plans and Surveys. Maryland Geological Survey. 1935.

³ Letter from Mr. C.J. Ervels, Plant Manager, to Mr. Leroy Jonas, Maryland Water Resources Administration. 11 August 1978.

the level of the subsurface water to rise and infiltrate the discharge line through cracks and leaking seams in one area of the line. After diverting the discharge around the area, the level of Cr^{+6} in the discharge fell to 2.8 lbs./24 Hrs.

Therefore, 2.8 lbs. of Cr^{+6} /24 Hrs. was due to infiltration of contaminated subsurface water, indicating a high level of Cr^{+6} in the subsurface water.

Demographics

The Allied facility is located along the north shore of the Northwest Harbor, almost directly across the Harbor from Federal Hill, a prominent Baltimore landmark. "Harbor Place," the City's showpiece shopping mall, is located approximately 3400 feet northwest of the site, across the inner basin. The site is in an industrial area, and no major transportation routes run past it, but several major routes are close to the facility: Eastern Avenue, 1600 feet north; Fayette Street, 4000 feet north; Hanover Street, 4400 feet west. The planned route I-95 extension and tunnel will lie approximately 4400 feet south of the site.

The area immediately surrounding the facility consists of small to medium sized manufacturing facilities and a lumber yard. Within 1/4 mile radius of the site, there are estimated to be less than 500 residents. Within 1/2 mile radius, the population is estimated at between 1000 and 3000, and within 3/4 mile radius, the number of residents jumps to between 5000 and 10,000. A circle with a 1-mile radius, and centered at the site, would contain major areas of downtown Baltimore including City Hall, several libraries, schools and hospitals, a large part of south Baltimore, and several parks and playgrounds.

Geology¹ (see MAP B-3)

The Allied Chemical facility at Block and Wills Streets is underlain by a small section of the clay unit of the Arundel Formation, extending westward from a larger outcrop. The site is bounded on three sides by artificial fill material. The Arundel clay ranges in thickness from 1.6 to 100 feet.

¹Geologic Map of Baltimore County and City. Maryland Geological Survey. 1976.

The unit consists of gray, brown, black and red kaolinitic and illitic clays resulting from the alteration of Feldspar under different weathering conditions. The clays are interbedded and have quartz sand and silt throughout. The Arundel clay is typically poorly bedded but can be massive. Lignitized wood remains have been found in the Arundel clay.

The Arundel clay is surrounded on three sides by artificial fill. These areas mark shallow, near-shore areas adjacent to the original shoreline that have been filled in to create usable land. Much of this fill material probably consisted of chromite ore tailings generated at the facility. The depth of this artificial fill is unknown.

Under the Arundel clay and artificial fill lies the Patuxent sand. It is not known exactly what thickness of Arundel clay or artificial fill lies over the Patuxent sand. The depth to bedrock under the site is between 80 and 100 feet.

Hydrology

The major part of the area on which the Allied site is located consists of artificial fill used to reclaim low lying swamp or near shore areas from Baltimore Harbor. Original drainage and shoreline maps show the Block and Wills Street area was originally a small peninsula extending from east to west. Given that the major part of the site consists of artificial fill, most likely chromite ore tailings, it seems reasonable that the subsurface water has direct contact with the harbor. Subsurface water flow is expected to be towards the harbor, and little if any water is expected to infiltrate the surface and down through the artificial fill to underlying geologic units.

Net precipitation in the area is estimated as approximately 10 inches per year. The surface is almost totally covered by asphalt, concrete or buildings, inducing the rate of infiltration. Although located along the harbor, the flood hazard potential is low. According to plant officials, the site has never been flooded.

Critical Environments

The Allied facility is located along the north shore of Baltimore's northwest harbor. The harbor is an arm of the Patapsco River, which enters the Chesapeake Bay approximately 10 to 15 miles downstream. The Chesapeake

is the largest estuary system in the U.S., and one of the most productive estuary's in the world. The estuary is a critical environment for many species. The issue of whether the Allied facility is contributing to the degradation of the Chesapeake Bay cannot be determined from available information.

Waste Characteristics¹

In responding to the Eckhardt Survey, Allied listed 6800 tons of chromite ore tailings as being disposed on-site. These tailings contained unknown amounts of Cr^{+3} and Cr^{+6} , the oxidation states of chromium which are environmentally important. Cr^{+6} is significantly more toxic than Cr^{+3} . Cr^{+6} has been shown to be a potent carcinogen while Cr^{+3} has not. The oxides and salts of Cr^{+6} are very soluble in water while those of Cr^{+3} are not. However, Cr^{+3} can be converted into Cr^{+6} under certain conditions. These conditions include exposing Cr^{+3} in water to ultraviolet light and pH of 7 to 10, conditions which readily exist in surface waters, according to tests. For these reasons, EPA considered chromium as a listed hazardous waste when occurring in concentrations of over 5 PPM. Recently, EPA amended the RCRA regulations to delete Cr^{+3} from the measurements. The chromite ore tailings generated by Allied are thought to exceed the concentration of 5.0 PPM for Cr^{+6} .

EPA suspects that chromium can migrate for great distances downstream from discharge points. Little is thought to settle out into river sediments. The bioaccumulation potential for chromium is low.

¹U.S. EPA RCRA Background Documents - Health and Environmental Effects Document. April 1980.

3.0 FIELD INVESTIGATION REPORT

The site investigation team consisted of:

- Edward Tokarski - Environmental Scientist - JRB Associates
- Claudia Furman - Geologist - JRB Associates
- Philip Spooner - Soil Scientist - JRB Associates
- Joe Stang - Regional Inspector - MD DHMH

The team arrived on-site at approximately 10:45 a.m. on 11/17/81. The team signed in and was informed that respirators were to be carried while on-site. Mr. Malcolm C. Mosher, Manager, Environmental Services, accompanied the team while on-site and conducted the tour of the site.

Access to the site is tightly controlled, and visitors must sign in and must be accompanied by an official while on-site. A new guard house providing more security is being constructed. All sections of the plant area not taken by the manufacturing facility are covered with asphalt. The chromite ore is brought on-site by rail, and stored in the open in a corner of the plant. The storage area is underlain with asphalt. The chromite ore tailings are taken immediately from the point of generation to a storage shed, where they are then loaded onto trucks which deliver the load to the Hawkins Point Landfill. Only a 1-day amount of waste is stored on-site.

In walking around the site, no evidence of spills, explosions, or releases was found. There was no indication of underlying soil make-up. No evidence of discolored discharge was found along any of the bulkheads, nor was there any color to the NPDES discharge.

Mr. Mosher said he had no knowledge of disposal of chromite ore tailings on-site. The team left the site at approximately 11:30 a.m.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the background information collected and observations made during the site visit, the following conclusions are made:

1. Portions of the site have been reclaimed from Baltimore Harbor using chromite ore tailings as fill material. It is estimated that 7 to 8 acres at the site may be underlain by the chromite ore tailings.
2. Subsurface water is contaminated with Cr^{+6} .
3. Surface water is the most probable route of contaminant migration. Cr^{+6} entering the Baltimore Harbor is expected to be highly mobile and may be capable of being transported into the Chesapeake Bay.
4. Ground water of the Patuxent Formation underlying the site is not suspected of being contaminated by Cr^{+6} migrating from the site.

Based upon these conclusions, the following recommendation is made:

1. It is unknown to what extent the chromite ore tailings are reaching Cr^{+6} into Baltimore Harbor. Tests should be made of the Harbor area surrounding the site to determine the concentration of Cr^{+6} entering the Harbor. The subsurface water should also be sampled to determine the concentration of Cr^{+6} in this water. Both EPA and the state should be informed of the results of these efforts. Should large quantities of Cr^{+6} be found in the Harbor, some method of isolating the site from the Harbor may be necessary.

APPENDIX A

ECKHARDT REPORT INTRODUCTION AND SITE DESCRIPTION

WASTE DISPOSAL SITE SURVEY

REPORT

together with

ADDITIONAL AND SEPARATE VIEWS

BY THE

SUBCOMMITTEE ON OVERSIGHT AND
INVESTIGATIONS

OF THE

COMMITTEE ON INTERSTATE AND
FOREIGN COMMERCE

HOUSE OF REPRESENTATIVES

NINETY-SIXTH CONGRESS

FIRST SESSION



OCTOBER 1979

U.S. GOVERNMENT PRINTING OFFICE

52-419 O

WASHINGTON : 1979

I. INTRODUCTION

A. OVERVIEW

The hazardous waste disposal problem may well be the single most significant environmental health issue of this decade. Millions of tons of toxic wastes are disposed of each year in an environmentally unsound manner resulting in what have been aptly labeled "ticking time bombs" which pose imminent and untold hazards to man and the environment.

In October of 1978, the Subcommittee on Oversight and Investigations of the Interstate and Foreign Commerce Committee, prompted by increasing hazardous waste disposal problems including events at Love Canal in Niagara Falls, New York, began an extensive investigation into the matter. The Subcommittee was interested in the magnitude of the problem and the adequacy of existing legislation to cope with it. In addition, the Subcommittee wanted to assess the U.S. Environmental Protection Agency's (EPA) progress in implementing a 1976 Congressional law—the Resource Conservation and Recovery Act (RCRA)¹—which provided EPA with the authority to regulate hazardous waste disposal, and to determine if RCRA would (1) allow for appropriate public response to situations like Love Canal and (2) preclude the possibilities for such situations in the future.

The Subcommittee's inquiries disclosed that despite enactment of hazardous waste legislation in 1976, little was known about the true magnitude of the problem. No one knew how many millions of tons of hazardous waste were generated each year. And more importantly, while it was believed that hundreds of "ticking time bombs" existed across the country, no one knew exactly how many, where they were located, or who was responsible for them.

Believing that it was most important to secure such information, and since EPA was not acting with dispatch to collect it, the Subcommittee decided to conduct its own survey—the first national study of waste disposal sites—to begin to determine the magnitude of the problem.

The purpose of the survey was to initiate a systematic effort to identify the number, nature, and location of all waste disposal sites across the country, whether they currently pose health or environmental hazards or not. As a first step, the Subcommittee requested the participation of the 53 largest domestic chemical companies. This was not to suggest that the disposal practices of the chemical industry are particularly bad or that the chemical industry is primarily responsible for hazardous sites. But the very nature of the chemical industry is such that large quantities of potentially dangerous wastes are generated, and the national survey had to begin somewhere. The results are only a sampling of the situation. All of the companies cooperated voluntarily. They provided information about the waste disposal practices of the 1,605 chemical plant facilities that they own or operate including data on 3,383 disposal sites used by these facilities since

¹ Pub. L. 94-580, Oct. 21, 1976.

1950. This report describes the intent, conduct, and findings of that survey.

The methodology for selecting the companies participating in the survey, their identity, the Subcommittee's letter of invitation, and the standardized questionnaire and related instructions which were furnished to the companies are set forth in Appendices A, B, C and D, respectively.

Each of the 1,605 facilities was asked to provide information on every site or location used since 1950 (or earlier if records or employees' memories permitted) for the disposal of wastes from the plant's chemical processes. Information requested included: amount and content of waste disposed at a particular site, kinds of disposal methods used at the site, current status of the site (open or closed), ownership of the site, and the site's name and location. For any waste hauled from the plant and taken to a location unknown to the plant operators, information was requested on the name of the hauler and the amount and content of the waste hauled. Facilities were also asked to report the amount of process waste generated at their plants during 1978 that was not directly reprocessed or recycled at the plant or covered by a National Pollutant Discharge Elimination System (NPDES) permit, and the methods by which these wastes were disposed.

MARYLAND

WASTE DISPOSAL SITE DIRECTORY

MARYLAND

BALTIMORE BALTIMORE WORKS, BLOCK STREET AT MILLS 21231

SITE IS LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY AND IS KNOWN TO HAVE BEEN USED FOR DISPOSAL DURING 1955. SITE IS NO LONGER IN USE. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE THROUGH 1978 WAS REPORTED AS 68 HUNDRED TONS. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE HEAVY METALS AND TRACE METALS (REPORTED ORGANICALLY AND INORGANICALLY) AND INORGANICS. METHODS OF DISPOSAL INCLUDE MIXED INDUSTRIAL WASTE LANDFILL.

BALTIMORE CURTIS BAY, 1901 BIRCH ROAD

SITE IS NOT LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY, BUT IS KNOWN TO HAVE BEEN USED FOR DISPOSAL DURING 1978. AT TIME OF USE, SITE WAS OWNED BY PRIVATE CONCERN OTHER THAN CHEMICAL COMPANY INCLUDED IN THIS SURVEY. SITE IS STILL BEING USED. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE ORGANICS. METHODS OF DISPOSAL INCLUDE TREATMENT (E.G.: NEUTRALIZATION).

BALTIMORE CURTIS BAY PLANT, 5501 PENNINGTON AVE 21226

SITE IS LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY AND IS KNOWN TO HAVE BEEN USED FOR DISPOSAL FROM 1952 TO 1979. SITE IS STILL BEING USED. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE THROUGH 1978 WAS REPORTED AS 27 HUNDRED TONS. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE INORGANICS. METHODS OF DISPOSAL INCLUDE MIXED INDUSTRIAL WASTE LANDFILL.

BALTIMORE CURTIS BAY PLANT, 5501 PENNINGTON AVE 21226

SITE IS LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY AND IS KNOWN TO HAVE BEEN USED FOR DISPOSAL FROM 1956 TO 1979. SITE IS NO LONGER IN USE. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE WAS NOT REPORTED. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE ORGANICS. METHODS OF DISPOSAL INCLUDE MIXED INDUSTRIAL WASTE LANDFILL AND CRUMBED WASTE LANDFILL.

BALTIMORE CURTIS BAY PLANT, 5501 PENNINGTON AVE 21226

SITE IS LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY AND IS KNOWN TO HAVE BEEN USED FOR DISPOSAL FROM 1950 TO 1975. SITE IS NO LONGER IN USE. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE WAS NOT REPORTED. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE HEAVY METALS AND TRACE METALS (REPORTED ORGANICALLY AND INORGANICALLY) AND MISCELLANEOUS WASTE MATERIAL. METHODS OF DISPOSAL INCLUDE MIXED INDUSTRIAL WASTE LANDFILL.

BALTIMORE CURTIS BAY PLANT, 5501 PENNINGTON AVE 21226

SITE IS LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY AND IS KNOWN TO HAVE BEEN USED FOR DISPOSAL FROM 1950 TO 1968. SITE IS NO LONGER IN USE. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE WAS NOT REPORTED. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE ORGANICS. METHODS OF DISPOSAL INCLUDE REPROCESSING AND/OR RECYCLING AND OTHER UNCATAGORIZED METHODS.

BALTIMORE CUMP AREA, 5500 CHEMICAL ROAD 21226

SITE IS LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY AND IS KNOWN TO HAVE BEEN USED FOR DISPOSAL FROM 1916 TO 1979. SITE IS STILL BEING USED. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE THROUGH 1978 WAS REPORTED AS 1,165 HUNDRED TONS. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE ACID SOLUTIONS (WITH PH < 3), BASE SOLUTIONS (WITH PH > 12), HEAVY METALS AND TRACE METALS (REPORTED ORGANICALLY AND INORGANICALLY), RADIOACTIVE RESIDUES (WITH OVER 50 MICRO-CURIES PER GRAM), INORGANICS AND MISCELLANEOUS WASTE MATERIAL. METHODS OF DISPOSAL INCLUDE MIXED INDUSTRIAL WASTE LANDFILL AND PITS, POND AND LAGOONS.

BALTIMORE DUNDALK MARINE TERMINAL, ADDRESS UNREPORTED 21222

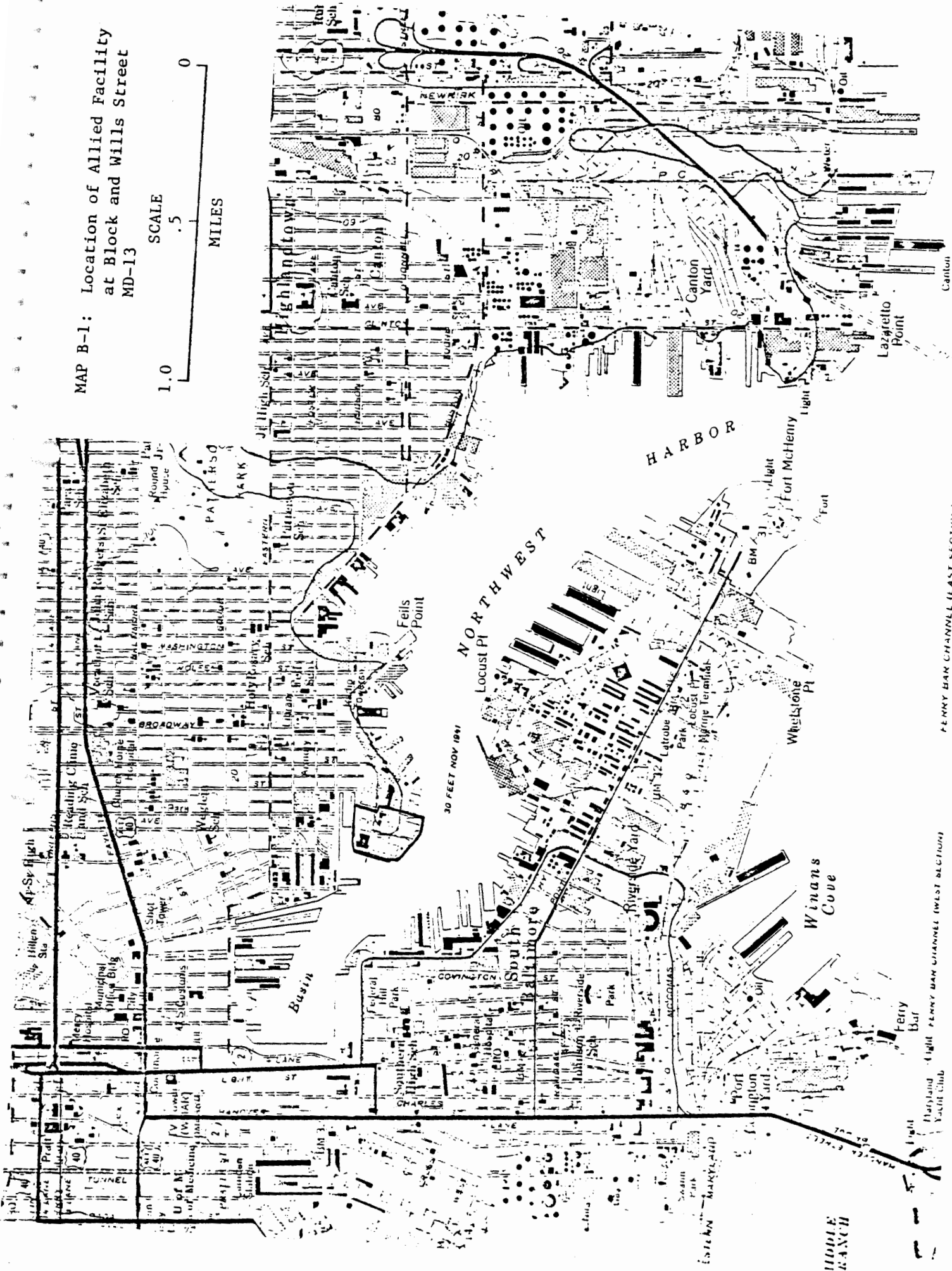
SITE IS NOT LOCATED ON PROPERTY OF CHEMICAL PLANT PARTICIPATING IN SURVEY, BUT IS KNOWN TO HAVE BEEN USED FOR DISPOSAL FROM 1950 TO 1975. AT TIME OF USE, SITE WAS OWNED BY CHEMICAL COMPANY INCLUDED IN THIS SURVEY. SITE IS NO LONGER IN USE. AMOUNT OF CHEMICAL PROCESS WASTE DISPOSED OF AT THIS SITE THROUGH 1978 WAS REPORTED AS 26,000 HUNDRED TONS. CHEMICAL COMPONENTS OF WASTE DISPOSED AT THIS SITE INCLUDE HEAVY METALS AND TRACE METALS (REPORTED ORGANICALLY AND INORGANICALLY) AND INORGANICS. METHODS OF DISPOSAL INCLUDE MIXED INDUSTRIAL WASTE LANDFILL.

APPENDIX B

AREA MAPS

MAP B-1: Location of Allied Facility
at Block and Wills Street
MD-13

SCALE
1.0 .5 0
MILES



FERRY BAR CHANNEL (LAST SECTION)

FERRY BAR CHANNEL (WEST SECTION)

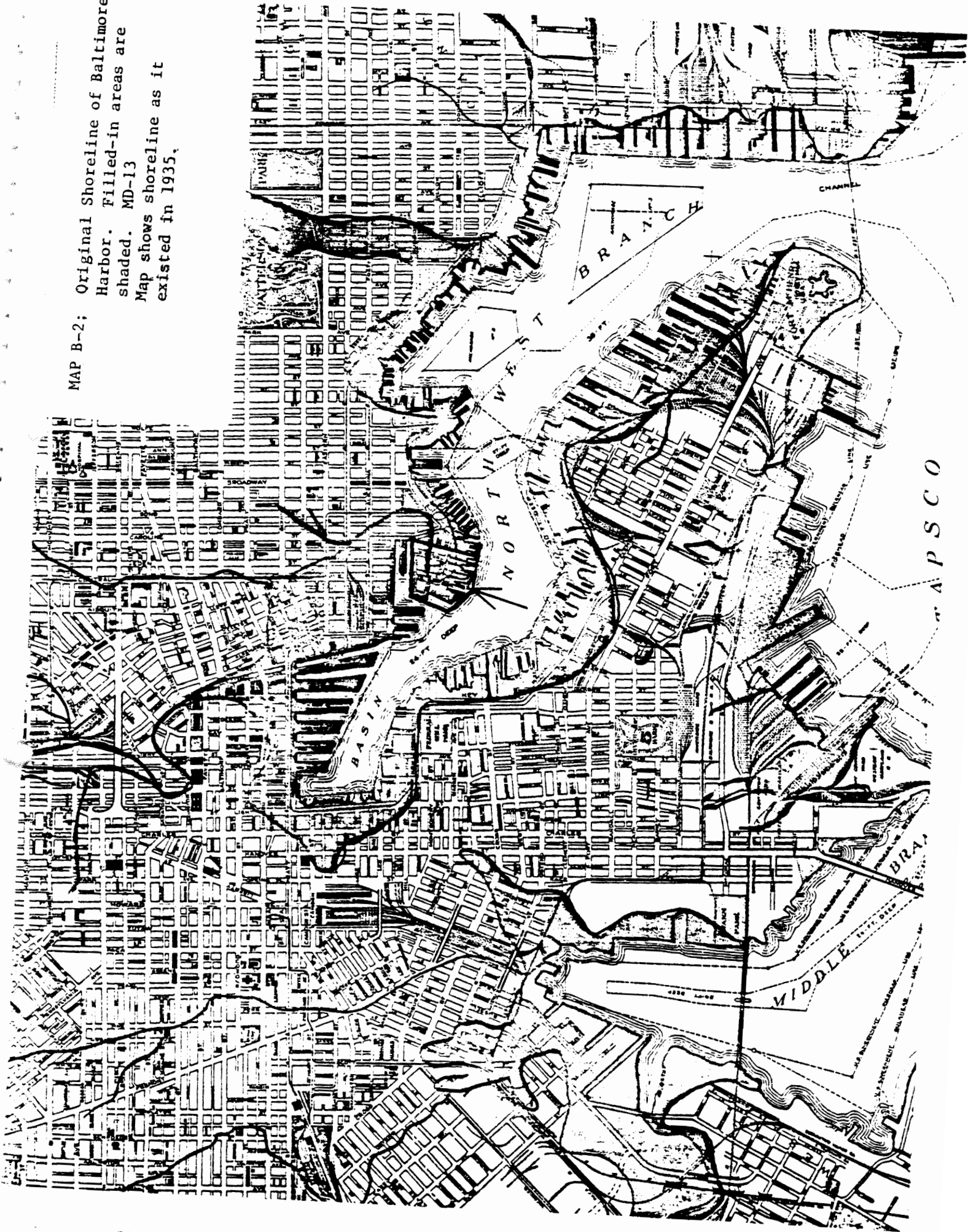
Ferry Bar

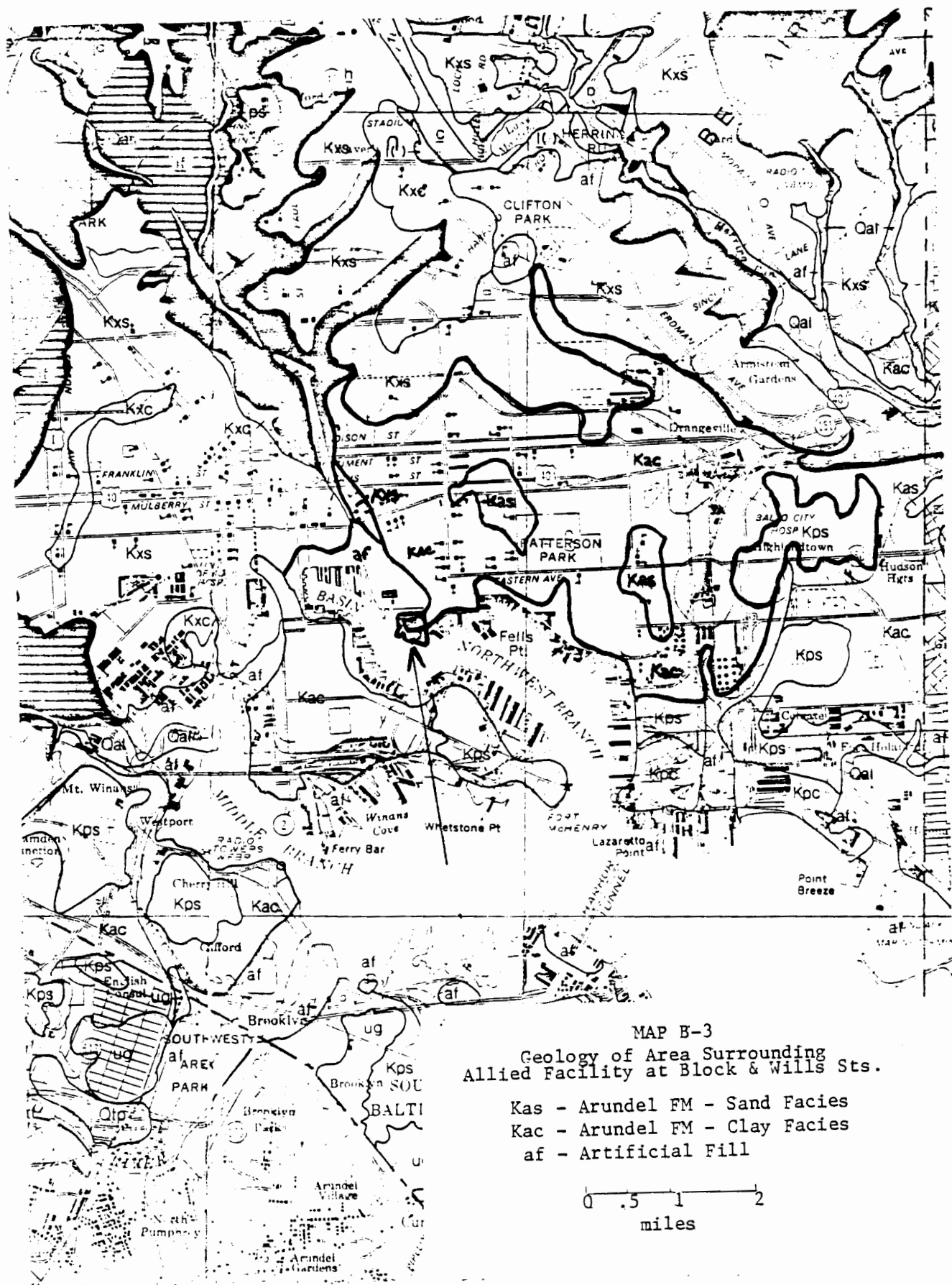
Light

Yacht Club

HIDDLE
RANCH

MAP B-2; Original Shoreline of Baltimore Harbor. Filled-in areas are shaded. MD-13 Map shows shoreline as it existed in 1935.





APPENDIX C

DOCUMENTATION OF SUBSURFACE WATER CONTAMINATION

Industrial Chemicals Division
Block Street at Wills
Baltimore, Maryland 21231
(301) 675-0555

August 11, 1978

FH

DP-38

Mr. Leroy Jonas, Chief
Enforcement Officer
Maryland Department of Water Resources
Tawes State Office Building
Annapolis, Maryland 21401

Re: Allied Chemical Corporation
Industrial Chemicals Division
Block Street at Wills
Baltimore, Maryland 21231

Effluent Excursion Incident - Saturday, August 5, 1978

Dear Mr. Jonas:

The following confirms your telephone conversation of Monday, August 7, 1978, with Dr. V.J. Marchesani.

As agreed in your conversation with Dr. Marchesani, there is no need to contact EPA, Region III, in this matter since authority for NPDES Permits has been transferred to the State of Maryland.

During the twenty-four (24) hour period from 8:00 a.m. Saturday, August 5, 1978 to 8:00 a.m. Sunday, August 6, 1978, a chromium discharge of 6.6 pounds net (as Cr⁺⁶) occurred. This loading exceeds the maximum permitted load of 6.2 pounds net.

★ An investigation resulted in the determination that the once-through harbor cooling water sewerer through outfall 001 as a result of seven (7) days of heavy rainfall, contacted chrome contaminated subsurface ground water entering the underground piping through cracks, faults, and poor seals.

Mr. Leroy Jonas, Chief
Enforcement Office
Maryland Department of Water Resources

August 11, 1978

The site subsurface ground water contains varying qualities of water soluble hexavalent chromium, as a result of over 100 years of chrome chemicals manufacturing. Specifically, *quality?* the connection between a cast-concrete basin wall and a steel outfall pipe, was found to be cracked, and therefore, leaching chrome contaminated ground water into the outfall piping. Once found, the flow of water was immediately diverted around the problem area. This resulted in a net chromium discharge of 2.8 pounds for the time period 8:00 a.m. Sunday, August 6, 1978 through 8:00 a.m. Monday, August 7, 1978. This is well-below the plant's permitted load of 6.2 pounds net for a twenty-four (24) hour period.

The discharge piping has now been connected and welded directly to the outfall line, bypassing the concrete catch basin. By this action, the possibility of outfall contamination from this source has been eliminated.

Very truly yours,



C.J. Ewels
Manager

CJE:em

APPENDIX D

U.S.EPA FORM T2070-2

POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT



POTENTIAL HAZARDOUS WASTE SITE
IDENTIFICATION AND PRELIMINARY ASSESSMENT

REGION 3 SITE NUMBER (to be assigned by HQ)

NOTE: This form is completed for each potential hazardous waste site to help set priorities for site inspection. The information submitted on this form is based on available records and may be updated on subsequent forms as a result of additional inquiries and on-site inspections.

GENERAL INSTRUCTIONS: Complete Sections I and III through X as completely as possible before Section II (Preliminary Assessment). File this form in the Regional Hazardous Waste Log File and submit a copy to: U.S. Environmental Protection Agency; Site Tracking System; Hazardous Waste Enforcement Task Force (EN-335); 401 M St., SW; Washington, DC 20460.

I. SITE IDENTIFICATION

A. SITE NAME Allied Chemical Baltimore Works		B. STREET (or other identifier) Block and Wills St. (1348 Block Street)	
C. CITY Baltimore	D. STATE MD	E. ZIP CODE 21231	F. COUNTY NAME Baltimore
G. OWNER/OPERATOR (if known) 1. NAME Allied Chemical, Inc.		2. TELEPHONE NUMBER 301/675-0555	
H. TYPE OF OWNERSHIP <input type="checkbox"/> 1. FEDERAL <input type="checkbox"/> 2. STATE <input type="checkbox"/> 3. COUNTY <input type="checkbox"/> 4. MUNICIPAL <input checked="" type="checkbox"/> 5. PRIVATE <input type="checkbox"/> 6. UNKNOWN			
I. SITE DESCRIPTION Chromium chemicals manufacturing facility partially built on chromite ore tailings containing Cr ⁺⁶ .			
J. HOW IDENTIFIED (i.e., citizen's complaints, OSHA citations, etc.) Cong. Eckhardt			K. DATE IDENTIFIED (mo., day, & yr.) 11/01/79
L. PRINCIPAL STATE CONTACT 1. NAME Mr. Paul Thompson, MD Dept. Health and Mental Hygiene		2. TELEPHONE NUMBER 301/383-6650	

II. PRELIMINARY ASSESSMENT (complete this section last)

A. APPARENT SERIOUSNESS OF PROBLEM <input type="checkbox"/> 1. HIGH <input type="checkbox"/> 2. MEDIUM <input checked="" type="checkbox"/> 3. LOW <input type="checkbox"/> 4. NONE <input type="checkbox"/> 5. UNKNOWN	
B. RECOMMENDATION <input type="checkbox"/> 1. NO ACTION NEEDED (no hazard) <input type="checkbox"/> 2. IMMEDIATE SITE INSPECTION NEEDED a. TENTATIVELY SCHEDULED FOR: b. WILL BE PERFORMED BY: <input checked="" type="checkbox"/> 3. SITE INSPECTION NEEDED a. TENTATIVELY SCHEDULED FOR: b. WILL BE PERFORMED BY: <input checked="" type="checkbox"/> 4. SITE INSPECTION NEEDED (low priority)	

C. PREPARER INFORMATION 1. NAME Ed Tokarski, JRB Associates	2. TELEPHONE NUMBER 703/821-4600	3. DATE (mo., day, & yr.) 1/27/82
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III. SITE INFORMATION

A. SITE STATUS <input type="checkbox"/> 1. ACTIVE (Those industrial or municipal sites which are being used for waste treatment, storage, or disposal on a continuing basis, even if intermittently.) <input checked="" type="checkbox"/> 2. INACTIVE (Those sites which no longer receive wastes.) <input type="checkbox"/> 3. OTHER (specify):		
B. IS GENERATOR ON SITE? <input type="checkbox"/> 1. NO <input checked="" type="checkbox"/> 2. YES (specify generator's four-digit SIC Code): 2819		
C. AREA OF SITE (in acres) 20 Acres	D. IF APPARENT SERIOUSNESS OF SITE IS HIGH, SPECIFY COORDINATES 1. LATITUDE (deg.-min.-sec.) 39° 16' 09" N 2. LONGITUDE (deg.-min.-sec.) 76° 35' 56" W	
E. ARE THERE BUILDINGS ON THE SITE? <input type="checkbox"/> 1. NO <input checked="" type="checkbox"/> 2. YES (specify): Manufacturing Facility		

IV. CHARACTERIZATION OF SITE ACTIVITY

Indicate the major site activity(ies) and details relating to each activity by marking 'X' in the appropriate boxes.

<input checked="" type="checkbox"/> A. TRANSPORTER	<input checked="" type="checkbox"/> B. STORER	<input checked="" type="checkbox"/> C. TREATER	<input checked="" type="checkbox"/> D. DISPOSER
1. RAIL	1. PILE	1. FILTRATION	1. LANDFILL
2. SHIP	2. SURFACE IMPOUNDMENT	2. INCINERATION	2. LANDFARM
3. BARGE	3. DRUMS	3. VOLUME REDUCTION	3. OPEN DUMP
4. TRUCK	4. TANK, ABOVE GROUND	4. RECYCLING/RECOVERY	4. SURFACE IMPOUNDMENT
5. PIPELINE	5. TANK, BELOW GROUND	5. CHEM./PHYS. TREATMENT	5. MIDNIGHT DUMPING
6. OTHER (specify):	6. OTHER (specify):	6. BIOLOGICAL TREATMENT	6. INCINERATION
		7. WASTE OIL REPROCESSING	7. UNDERGROUND INJECTION
		8. SOLVENT RECOVERY	8. OTHER (specify):
		9. OTHER (specify):	

E. SPECIFY DETAILS OF SITE ACTIVITIES AS NEEDED

Facility manufactures chromium containing chemicals. Large quantities of chromium ore tailings are generated and disposed throughout the area.

V. WASTE RELATED INFORMATION

A. WASTE TYPE

☐ 1. UNKNOWN ☐ 2. LIQUID ☒ 3. SOLID ☐ 4. SLUDGE ☐ 5. GAS

B. WASTE CHARACTERISTICS

☐ 1. UNKNOWN ☐ 2. CORROSIVE ☐ 3. IGNITABLE ☐ 4. RADIOACTIVE ☐ 5. HIGHLY VOLATILE
☒ 6. TOXIC ☐ 7. REACTIVE ☐ 8. INERT ☐ 9. FLAMMABLE

☐ 10. OTHER (specify):

C. WASTE CATEGORIES

1. Are records of wastes available? Specify items such as manifests, inventories, etc. below.

2. Estimate the amount (specify unit of measure) of waste by category; mark 'X' to indicate which wastes are present.

a. SLUDGE	b. OIL	c. SOLVENTS	d. CHEMICALS	e. SOLIDS	f. OTHER
AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT	AMOUNT
				186,000 ton/yr	
UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE	UNIT OF MEASURE
				tons	
<input checked="" type="checkbox"/> (1) PAINT, PIGMENTS	<input checked="" type="checkbox"/> (1) OILY WASTES	<input checked="" type="checkbox"/> (1) HALOGENATED SOLVENTS	<input checked="" type="checkbox"/> (1) ACIDS	<input checked="" type="checkbox"/> (1) FLYASH	<input checked="" type="checkbox"/> (1) LABORATORY PHARMACEUT.
(2) METALS SLUDGES	(2) OTHER (specify):	(2) NON-HALOGENATED SOLVENTS	(2) PICKLING LIQUORS	(2) ASBESTOS	(2) HOSPITAL
(3) POTW		(3) OTHER (specify):	(3) CAUSTICS	(3) MILLING/ MINE TAILINGS	(3) RADIOACTIVE
(4) ALUMINUM SLUDGE			(4) PESTICIDES	(4) FERROUS SMLTG. WASTES	(4) MUNICIPAL
(5) OTHER (specify):			(5) DYES/INKS	(5) NON-FERROUS SMLTG. WASTES	(5) OTHER (specify):
			(6) CYANIDE	<input checked="" type="checkbox"/> (6) OTHER (specify):	
			(7) PHENOLS	ore tailings after processing	
			(8) HALOGENS		
			(9) PCB		
			(10) METALS		
			(11) OTHER (specify):		

V. WASTE RELATED INFORMATION (continued)

3. LIST SUBSTANCES OF GREATEST CONCERN WHICH MAY BE ON THE SITE (place in descending order of hazard).

Hexavalent Chromium

4. ADDITIONAL COMMENTS OR NARRATIVE DESCRIPTION OF SITUATION KNOWN OR REPORTED TO EXIST AT THE SITE.

VI. HAZARD DESCRIPTION

A. TYPE OF HAZARD	B. POTENTIAL HAZARD (mark 'X')	C. ALLEGED INCIDENT (mark 'X')	D. DATE OF INCIDENT (mo., day, yr.)	E. REMARKS
1. NO HAZARD				
2. HUMAN HEALTH				
3. NON-WORKER INJURY/EXPOSURE				
4. WORKER INJURY				
5. CONTAMINATION OF WATER SUPPLY				
6. CONTAMINATION OF FOOD CHAIN				
7. CONTAMINATION OF GROUND WATER				
8. CONTAMINATION OF SURFACE WATER	X			Hexavalent chromium from waste may be leaching into Baltimore Harbor.
9. DAMAGE TO FLORA/FAUNA				
10. FISH KILL				
11. CONTAMINATION OF AIR				
12. NOTICEABLE ODORS				
13. CONTAMINATION OF SOIL				
14. PROPERTY DAMAGE				
15. FIRE OR EXPLOSION				
16. SPILLS/LEAKING CONTAINERS/ RUNOFF/STANDING LIQUIDS				
17. SEWER, STORM DRAIN PROBLEMS				
18. EROSION PROBLEMS				
19. INADEQUATE SECURITY				
20. INCOMPATIBLE WASTES				
21. MIDNIGHT DUMPING				
22. OTHER (specify):				

VII. PERMIT INFORMATION

A. INDICATE ALL APPLICABLE PERMITS HELD BY THE SITE.

- ☒ 1. NPDES PERMIT ☐ 2. SPCC PLAN ☐ 3. STATE PERMIT (specify): _____
☒ 4. AIR PERMITS ☐ 5. LOCAL PERMIT ☐ 6. RCRA TRANSPORTER
☐ 7. RCRA STORER ☐ 8. RCRA TREATER ☐ 9. RCRA DISPOSER
☒ 10. OTHER (specify): RCRA Generator MD0069396711

B. IN COMPLIANCE?

- ☒ 1. YES ☐ 2. NO ☐ 3. UNKNOWN

4. WITH RESPECT TO (list regulation name & number): _____

VIII. PAST REGULATORY ACTIONS

- ☒ A. NONE ☐ B. YES (summarize below)

IX. INSPECTION ACTIVITY (past or on-going)

- ☐ A. NONE ☒ B. YES (complete items 1, 2, 3, & 4 below)

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION
Routine	Regular	MD HMH	Routine Inspection

X. REMEDIAL ACTIVITY (past or on-going)

- ☐ A. NONE ☒ B. YES (complete items 1, 2, 3, & 4 below)

1. TYPE OF ACTIVITY	2. DATE OF PAST ACTION (mo., day, & yr.)	3. PERFORMED BY: (EPA/State)	4. DESCRIPTION
Capping	1980	Private	Old chrome ore storage area capped with asphalt.

NOTE: Based on the information in Sections III through X, fill out the Preliminary Assessment (Section II) information on the first page of this form.

APPENDIX E: MITRE MODEL RATING
AND JUSTIFICATION

**APPENDIX E
MODEL WORKSHEETS**

Site Name: Allied Chemical Manufacturing Facility

Location: Block and Wills Streets

EPA Region: III

Person(s) in Charge of the Site: _____

Name of Reviewer: Edward Tokarski, JRB Associates

Site Overall Score: 19.20

General Description of the Site:

(For example: landfill, surface impoundment, pile, container; types of wastes; location of the site; contamination route of major concern; types of information needed for rating; agency action, etc.)

Facility manufactures chromium containing chemicals. Facility

is built on reclaimed land. Chromite ore tailings containing

Cr⁺⁶ were used as fill in reclaiming land from the Baltimore Harbor.

Site covers approximate 70 acres.

ROUTE - GROUND WATER

Rating Factor	Basis of Information	Site Rating (Circle One)	Multiplier	Site Score	Maximum Possible Score
1 OBSERVED RELEASE (per GW 1)					
Measured Level or Evidence of Release		0 1 2 3	1	45	45
If the site score is zero, go to step 2 otherwise, go to step 5					
2 ROUTE CHARACTERISTICS ¹ (per GW 2)					
Depth to Aquifer of Concern		0 1 2 3	2	4	6
Net Precipitation		0 1 2 3	1	2	3
Permeability of Unsaturated Zone		0 1 2 3	2	4	6
Subtotal				10	15
3 CONTAINMENT ^{1,2} (per GW 3)					
Containment		0 1 2 3	1	3	3
4 POTENTIAL FOR RELEASE					
Multiply site score from 2 by site score from 3. The product is site rating for this route.		3 x 10	1	30	45
5 RELEASE					
Enter site score from 1 or 4				45	45
6 WASTE CHARACTERISTICS ^{1,3} (per GW 4)					
Physical State		0 1 2 3	1	1	3
Persistence		0 1 2 3	2	6	6
Toxicity/Infectiousness		0 1 2 3	2	6	6
Subtotal				13	15
7 HAZARDOUS WASTE QUANTITY ¹ (per GW 5)					
Total Waste Quantity		0 1 2 3 4 5	1	5	5
(by Superfund definition) excluding waste that is totally contained					
8 TARGETS ¹ (per GW 6)					
Ground Water Use		0 1 2 3	3	3	9
Distance to Nearest Well Downgradient		0 1 2 3	3	3	9
Population Served by Ground Water Within 3 Mile Radius		0 1 2 3 4 5	6	12	30
Subtotal				18	48
9 GROUND WATER ROUTE SUBTOTAL					
A. Multiply 5 x 6 x 7 x 8 45 x 13 x 5 x 18 = 52650					152,000
B. Multiply [A.] by Normalization Factor of 0.6 and Divide by 1,000 $\frac{52650 \times .6}{1000}$					97.2
					(B) Route Subtotal

¹A rating of zero should be entered when data is unavailable to rate an additive factor. A rating of 1 should be entered when data is unavailable to rate a multiplicative category such as the waste quantity or containment. A total of 5% missing data for the entire site is allowed when rating a site.

²If the site has more than one type of containment (e.g., surface impoundment, landfill, containers, corridor or other structure) and enter the score from the worst case.

³Rate the five most hazardous wastes. Select the one with the highest subtotal score and enter that score.

ROUTE-GROUND WATER

JRB-0351336-1

Rating Factor	Comment-Justification For Ranking
1 Measured level of release	Cr ⁺⁶ contamination of ground water under the site has been documented.
2 Depth to aquifer	2) Patuxent outcrops in area, depth not well documented but thought to be between 20-50 feet BLS.
Net precipitation	2) Net ppt. is 10" per year.
Permeability of unsaturated zone	2) Area underlying site thought to be fairly permeable.
3 Containment	3) No leachate collection, no run-on diversions, no barriers between harbor and fill material.
6 Physical state	1) Solid at time of disposal.
Persistence	3) Chromium may exist in insoluble form indefinitely - U.S. EPA Background Document.
Toxicity/infectiousness	3) Cr ⁺⁶ severe chronic toxicity (systemic) known carcinogen.
7 Total waste quantity	5) 128,000 tons
8 Ground water use	0) saline under site - Patuxent is very good water source (1)
Distance to nearest well downgradient	1) 1 to 3 miles downgradient.
Population served by ground water in 3 mile radius	2) people drink ground water in 3 mile radius.
Other relevant comments	Site rated assuming Patuxent is aquifer of concern - But proximity to harbor makes it unlikely Cr ⁺⁶ will migrate to Patuxent.

ROUTE - SURFACE WATER

Rating Factor	Basis of Information	Site Rating (Circle One)	Multiplier	Site Score	Maximum Possible Score
1 OBSERVED RELEASE (ref SW 1)					
Measured level of evidence of release		0 1 2 3 4 5	1	45	45
If the site score is zero, go to step 2 otherwise, go to step 5					
2 ROUTE CHARACTERISTICS ¹ (ref SW 2)					
See Slope and Terrain		0 1 2 3	1	1	3
1 Year 24 Hour Rainfall		0 1 2 3	1	3	3
Distance to Surface Water		0 1 2 3	1	3	3
Flood Potential		0 1 2 3	2	2	6
Subtotal					15
3 CONTAINMENT ^{1,2} (ref SW 3)					
Containment		0 1 2 3	1		3
4 POTENTIAL FOR RELEASE					
Multiply site score from 2 by site score from 3. The product is site rating for this route.			1		45
5 RELEASE					
Enter site score from 1 or 4				45	45
6 WASTE CHARACTERISTICS ^{1,2} (ref SW 4)					
Physical State		0 1 2 3	1	1	3
Toxicity/Infectiousness		0 1 2 3	2	6	6
Persistence		0 1 2 3	2	6	6
Subtotal				8	15
7 HAZARDOUS WASTE QUANTITY ¹ (ref SW 5)					
Total Waste Quantity		0 1 2 3 4 5	1	5	5
(By Superfund definition excluding waste that is totally contained)					
8 TARGETS ¹ (ref SW 6)					
Surface Water Use		0 1 2 3	3	6	9
Critical Habitats		0 1 2 3	2	0	6
Population Served by Surface Water With Water Intake Within 3 Miles Downstream From Site		0 1 2 3 4 5	6	0	30
Subtotal				6	45
9 SURFACE WATER ROUTE SUBTOTAL					
A. Multiply 5 x 6 x 7 x 8				45 x 8 x 5 x 6 = 10800	151,875
B. Multiply [A.] by normalization factor of 0.64 and divide by 1,000				$\frac{10800 \times .64}{1000}$	6.9
				0.64	15.1 Route Subtotal

ROUTE-SURFACE WATER

JRB 0351330-2

Rating Factor	Comment-Justification For Ranking
1 Measured level or evidence of release	(Cr ⁺⁶) documented in Subsurface Tidal Water that has direct connection with Harbor.
2 Site slope or terrain	---
1, year-24 hr. rainfall	---
Distance to surface water	---
Flood potential	---
3 Containment	---
6 Physical state	1) Solid state when disposed.
Toxicity/ infectiousness	3) Acute toxic chronic systemic.
Persistence	3) Chromium may exist in insoluble form indefinitely - U.S. EPA Background documents.
7 Total waste quantity	3) 128,000 tons.
8 Surface water use	2) Commercial/industrial/recreation important fishing downstream.
Critical habitats	0) Estuarine greater than 2 miles downstream.
Population served by surface water with intake 3 mi. downstream from site	0) No known intakes within 3 miles downstream.
Other relevant comments	

10 AGGREGATE SITE RATING			
Route	Route Subtotal from 6, 8 or 9	Route Subtotal Squared	Maximum Possible Score
Ground Water	31.59	997.93	$(97.2)^2 = 9447.84$
Surface Water	6.9	47.61	$(97.2)^2 = 9447.84$
Air	0	0	$(97.2)^2 = 9447.84$
Fire and Explosion	----		$(97.2)^2 = 9447.84$
Direct Contact	----		$(97.2)^2 = 9447.84$
Sum		1045.54	47239.2
Square root of Sum		32.33	217.35
Overall Score* = $\left(\frac{\sqrt{\text{sum}} \times 100}{217.35} \right) \frac{32.33 \times 106}{168.36}$		19.20	100

*The overall score will be between 0 and 100. The Maximum Overall Score for a Site With Only One Exposure Route is 44.7.

*Not scored as per paragraph 2, supplement to Mitre Hazardous Waste Site Ranking Model, prepared for implementation of TDD 11q-8109-01, 9/4/81.

1. Since routes 4 & 5 not scored as per instructions, maximum possible score reduced by 48.99 ($9447.84 \times 3 = 168.36$)